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South American Butterflies.

SOUTH AMERICAN BUTTERFLIES.

1. *Morpho achillæna* (Hübner).
2. *Ageronia velutina* Bates.
3. *Heliconius phyllis* (Fabricius).
4. *Catagramma cynosura* Doubleday & Hewitson. (Underside.)
5. *Stalachtis phlegia* (Cramer).
6. *Agrias sardanapalus* Bates.
7. *Colias lesbia* (Fabricius).
8. *Catoblepia berecynthus* (Cramer).
9. *Callithea hewitsoni* Staudinger.
10. *Heliconius narcæa* Godart.
11. *Eresia simois* Hewitson.
12. *Eresia anieta* Hewitson.

SOUTH AMERICAN BUTTERFLIES.

1. Morpho ucalilene (Hübner).
2. Ige [illegible] [illegible].
3. Heliconius phyllis (Fabricius).
4. Callipsychus cynosura Doubleday & Hewitson. (Underside.)
5. Smilodes philegia (Cramer).
6. Agrias sardanapalus Bates.
7. Colias lesbia (Fabricius).
8. Catoblepia berecynthia (Cramer).
9. Callidea hesperion Staudinger.
10. Heliconius narcea Doubrt.
11. Eurema elathea Hewitson.
12. Pieris [illegible] Hewitson.

TO THE RIVER PLATE AND BACK

THE NARRATIVE OF A SCIENTIFIC MISSION TO SOUTH AMERICA, WITH OBSERVATIONS UPON THINGS SEEN AND SUGGESTED

BY

W. J. HOLLAND

Sc.D., LL.D. (St. Andrews), F.R.S. (Edinb.), F.Z.S., Etc.

DIRECTOR OF THE CARNEGIE MUSEUM, LATE CHANCELLOR OF THE UNIVERSITY OF PITTSBURGH

AUTHOR OF "THE BUTTERFLY BOOK," ETC.

WITH EIGHT PLATES IN COLOR FROM DRAWINGS BY THE AUTHOR AND 76 OTHER ILLUSTRATIONS

G. P. PUTNAM'S SONS
NEW YORK AND LONDON
The Knickerbocker Press
1913

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To

THE MANY CHARMING MEN AND WOMEN WHOSE ACQUAINTANCE I HAD THE HONOR OF MAKING IN SOUTH AMERICA

I Dedicate This Book

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PREFACE

SOME who are now engaged in literary pursuits would no doubt be far more profitably engaged in growing corn. "The first call" belongs to the stomach. There is always a market for breadstuffs. "Literary wares," on the other hand, often go a-begging. I have a friend who is a poet. For the last twenty years or more he has every day composed for the newspapers from four to ten stanzas of humorous verse. I complimented him recently upon the fecundity of his muse. "Oh, that is nothing!" he replied. "There is a man in Kansas who advertises that he will write poems in exchange for garden-truck." Even poets have stomachs, and call for food. Corn may be traded for culture.

Happy then the lot of the farmer! He needs but to carry his eggs to the market, and, if they be only "tolerably fresh," he is sure to return with his pockets filled with jingling dollars—or poems, if he lives in Kansas.

In view of the foregoing reflections it may appear to be a daring act for the writer to venture to add another to the long and ever-growing list of books; more especially to add another tale to the many which have been told by travelers. At first I hesitated, but finally yielded to the persuasions of certain of my friends, justly held in esteem by the literary world, who have

urged me to set down my impressions of a journey which at all events was pleasurable to me.

I brought back with me from South America a large series of photographs, some of them made by my assistant, Mr. Arthur S. Coggeshall, others obtained in places visited by us. During my journey, at such few moments of leisure as I could command, I made a number of sketches both in oil and water-colors. Some of these photographs and sketches I have used in illustrating the book.

This book is not a manual of statistics; it does not touch, except incidentally, upon the history of the great republics of the south; it is not intended to be in any sense didactic;—it is simply the record of a pleasant journey, during which I saw much and learned much which was of interest to me, and may also be of interest to my readers. If they derive half as much satisfaction from my pages as I had in my pilgrimage to the "Silver River" I shall feel repaid.

W. J. H.

PITTSBURGH,
September, 1913.

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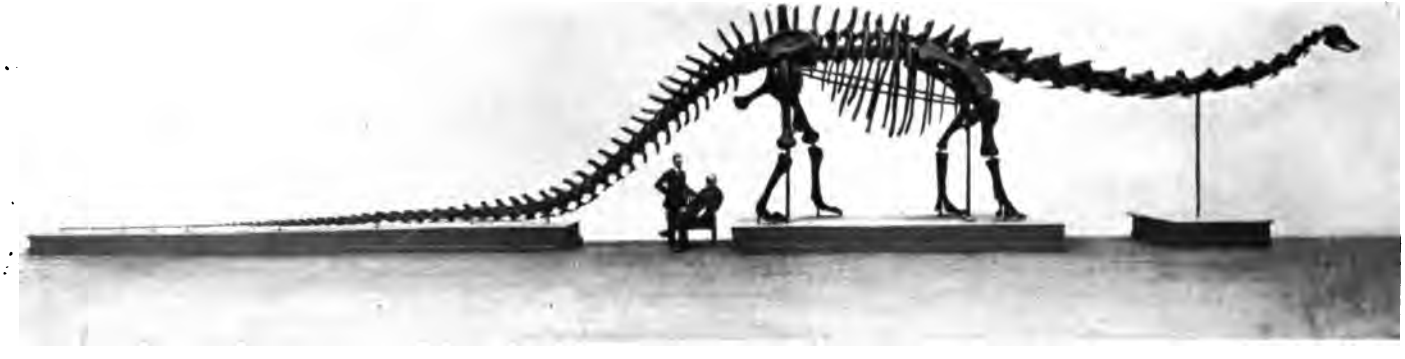


Diplodocus Carnegiei Hatcher.

Photograph of the Skeleton Mounted in the Carnegie Museum, Pittsburgh. Total Length, 84½ feet; Height at Hips, 13 feet.

To the River Plate and Back

CHAPTER I

THE DIPLODOCUS

"I wish I were an ichthyosaurus
And could swim the Lias ocean,
And eat fish. But, oh! I am not.
Alas! I cannot be an ichthyo-
Ichthyosaurus; for I 'm a diplo-
Diplodo-do-docus. I can tie
My rubber neck into a knot."

SONG-BOOK *of the Geological Society of America.*

ON November 11, 1911, Mr. Andrew Carnegie dictated a note to the writer, in which he stated that he had received from Dr. Roque Saenz Peña, the President of the Argentine Republic, a letter suggesting, that, inasmuch as replicas of the skeleton of *Diplodocus carnegiei* had been presented to the national museums of various European countries, a like donation to the National Museum of Argentina would be greatly appreciated. Mr. Carnegie went on to say in his note that the expression of the wish of a king or president is not to be lightly set aside, and accordingly instructed me to prepare such a replica, as soon as it could be conveniently done, and to arrange for its installation

in such museum as might be designated by the proper authorities.

At this point the reader, unless he is well versed in the recent progress of paleontological research, may well ask: "What is a Diplodocus?" He will find himself in the same frame of mind as the French Secretary of Legation who was being entertained in Philadelphia, and came to his host with a troubled countenance saying: "I have been here for some days and I hear everybody speaking about *ze Biddles*. Vat ees a Biddle? *Je ne comprends pas*."

Before answering the question, a little preliminary discourse of a semi-scientific nature is required for the enlightenment of the uninitiated. Should any one of my brethren of the Geological Society of America chance upon this book, he is at liberty to omit the perusal of what follows on the immediately succeeding pages.

The world in which we live is a very old world. Many things have happened during its long existence, and one of these, which is of interest to all of us, is the evolution upon its surface of plants and animals. No recording angel has written down the story of this process, and we are left to decipher it, as well as we may, from the records, more or less confused and fragmentary, which we find in the sedimentary rocks. These are the rocks, which once were mud and beds of sand, in which were buried bits of wood, leaves, shells, and the bones of various animals. In the lapse of ages the mud and the sand became cemented together and hardened, carrying with them as integral parts of their substance the remains which were included in them. These sedimentary rocks in the aggregate are very thick. It has been estimated that they have a

perpendicular depth of fifteen miles or more; not in one place, but when they are arranged in chronological order according to the times of their deposition. Their strata have been studied carefully, have been classified, and many of them named.

Lying on the crystalline rocks, which do not appear to have been laid down in water, there are great series of strata, consisting at first of the debris of eroded igneous rocks, which are known as Archean, in which the evidence of the existence of life is mostly inferential, based upon the fact that graphite and limestone occur in these beds. Upon these were subsequently deposited layers of mud, which settled down, when the world was young, at the bottom of ancient seas and oceans. In these are found here and there the remains of marine animals and plants, mostly of a lowly organization. To these very old strata geologists have applied the name *Paleozoic*, because they contain relics of the most ancient forms of life, the word "paleozoic" being composed of two Greek words which mean "ancient" and "life." Superimposed upon these older formations is another great series of rocky layers, some of which were laid down in the seas, others of which were formed on low-lying swampy lands, and still others in the beds of rivers and estuaries. These strata geologists are accustomed to call *Mesozoic*, the word being again formed from two Greek vocables meaning "middle" and "life." Still higher up in the ascending series is a third great aggregation of stony beds, to which geologists have given the name *Cenozoic*, compounded of Greek words which signify "new" and "life." These beds are often called *Tertiary*.

In the Paleozoic sandstones and limestones, as has been intimated, we have the remains of creatures which

lived in the seas; such as corals, shell-fish, trilobites, and in the upper strata curious fishes, mostly long since extinct. In the Mesozoic beds, which are of marine

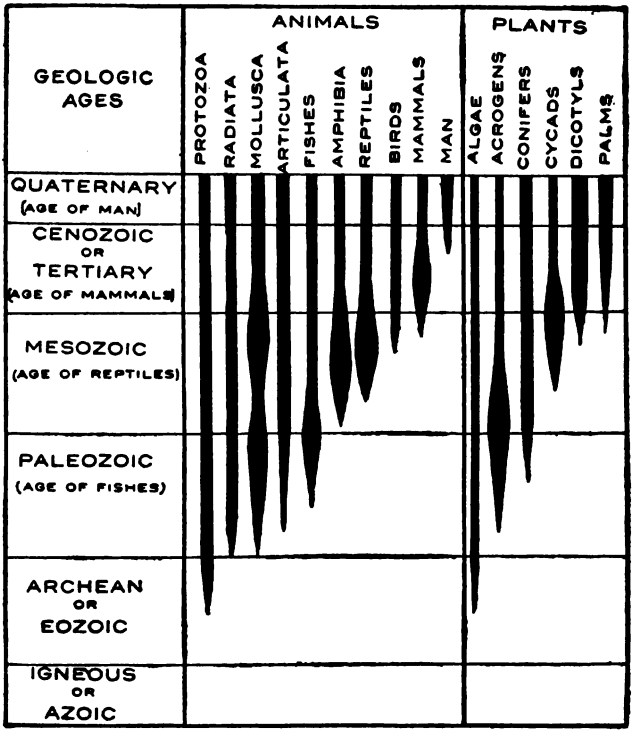


Fig. 1.—Diagram showing the succession of the geologic ages and the origin in time of animals and plants. (Modified after Leconte.)

origin, we find the remains of marine life, but we also find in some of the strata great beds of coal, formed no doubt on swampy land raised above the level of the sea; and we find further fishes and reptiles in great numbers, curious birds with teeth, and in the upper

strata a few very primitive mammals. In the Cenozoic rocks occur plants, fishes, reptiles, birds, and mammals, gradually becoming, as we approach the top of the series, more like the creatures which to-day exist upon the globe. Finally on top of the Tertiary we find the soil and gravel in which man of to-day plays his part.

The reptiles, which most concern us in this narrative, reached their highest development in Mesozoic times in point of numbers and variety of species. The Mesozoic age has been called "the age of reptiles," as the Cenozoic has been called "the age of mammals." But many of the reptiles of the Mesozoic were not like the reptiles of to-day. There were great groups of them which have become totally extinct, leaving no survivors at the present time. Among these were the *dinosaurs*. Towards the close of the Mesozoic age they attained their greatest development, and then in early Cenozoic times gradually died out. There were probably hundreds, even thousands, of different kinds of dinosaurs, which at one time lived upon the globe. We know that some of these were quite small; others were the hugest animals which have walked on four feet upon the surface of the globe. It was the discovery of fragments of some of these larger reptiles which led Sir Richard Owen, the great English naturalist, to coin a name for them, compounded of two Greek words, δεινός (deinos), meaning "terrible," and σαύρος (saurus), meaning "lizard." Dinosaurs are reptiles, which lived in the Mesozoic and at the beginning of the Cenozoic ages, millions of years ago. As I have intimated, not all of them were "terrible." Some of them were quite small. And these smaller reptiles are only called dinosaurs, because they belong to the same natural

order to which the huger beasts of which I have spoken have been assigned by systematists.

One of the great formations of rock belonging to the Mesozoic age is known by geologists as the Jurassic, so called because it is finely developed in the Jura Mountains. But this formation is not confined to Europe. Jurassic rocks occur in all parts of the globe. They have become the hunting-ground of those who desire to obtain well-preserved specimens of dinosaurs. There are great exposures of the Jurassic among the Rocky Mountains in Wyoming, Colorado, Utah, and other States.

One of the most indefatigable students of the extinct life of the North American continent was the late Professor Othniel C. Marsh of Yale University. He consecrated his life and the fortune bequeathed to him by his uncle, the celebrated philanthropist, George Peabody, to the task of elucidating the story buried in the strata. He died a poor man, before the work he had undertaken had been completed. Generations of men are likely to follow him to the grave before the whole story is rescued. Among the strange forms, fragments of which were obtained for Professor Marsh by his assistants working in the Jurassic strata of Wyoming, was that of a dinosaur, to which he gave the name of *Diplodocus*. The word is compounded from the Greek words διπλόος (diploös), meaning "double," and δοκός (dokos), meaning "beam," or "rafter." In the Sermon on the Mount the word *dokos* occurs in the well-known passage where The Great Teacher says, "First cast out the beam [rafter] out of thine own eye; and then shalt thou see clearly to cast out the mote out of thy brother's eye." The reason Professor Marsh chose these words in coining a name for the newly

discovered beast was the fact that on the lower side of the tail of the animal, where the vertebræ come together, there are little bones known to anatomists as chevrons, which in the case of these particular animals look like little rafters, and which are arranged in pairs. This arrangement, it has since been discovered, is not altogether peculiar to the species of the genus *Diplodocus*, but occurs in other allied dinosaurs; nevertheless, the name having been originally given to this form, according to the laws of scientific nomenclature it cannot be changed. Professor Marsh obtained through his assistants, principally through the labors of Dr. S. W. Williston, now the Professor of Paleontology in the University of Chicago, some of the limb-bones, two somewhat fragmentary skulls, various vertebræ, and other parts of the animal, sufficient to enable him to form an approximate idea of what it may have been like. The question of its form and structure was nevertheless left for want of more material in a somewhat uncertain state. Subsequently Professor Henry Fairfield Osborn obtained a pelvis and the greater part of the tail of a diplodocus, and published a paper enlarging our knowledge of the framework of the animal.

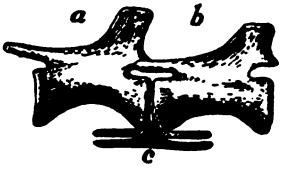


Fig. 2.—*a*, *b*, Two caudal vertebræ of *Diplodocus*; *c*. chevrons on under side of tail.

Shortly after the death of Professor Marsh, Mr. Andrew Carnegie expressed to the writer his wish that the Museum of the Institute which he had founded in Pittsburgh should undertake the task of prosecuting scientific researches along the same lines which had

been followed by his lamented friend, Dr. Marsh, and added the promise that he would provide for this purpose the necessary funds. It was a noble suggestion and a noble promise. Work was immediately begun and success speedily crowned the efforts of the talented assistants whom the writer was able to gather about him. Early in July, 1899, a telegram was received from an exploring party in Wyoming announcing the discovery not far from the banks of Sheep Creek in Albany County of the remains of a diplodocus more perfect than had thus far been discovered anywhere. The discovery had been made on July 4, 1899. During the summer and fall of that year, Dr. Jacob L. Wortman and his assistants, chief among them Mr. Arthur S. Coggeshall, labored continuously, and quarried out a large quantity of pieces of rock containing the bones of the monster. In the autumn these were brought to the laboratory of the Museum and the bones were extricated from the matrix. In the following spring the work was resumed under the care of that admirable and indefatigable collector, Mr. John Bell Hatcher. The remains of another specimen of the same species and of nearly the same size were found in the same deposit quite near by. The second skeleton supplied some parts which the first failed to yield. In the end it was discovered that by combining the two specimens a complete skeleton could be assembled.

Meanwhile, the writer, using the material secured, endeavored to reconstruct the skeleton in outline, and drew a rough preliminary sketch which he sent to Mr. Carnegie, who was sojourning at his summer home in Scotland. The drawing was hung upon the wall of one of the pleasant rooms of the castle. Some time afterward King Edward VII. called upon Mr. Carnegie

at Skibo. While there his eye chanced to rest upon the sketch and his curiosity was excited. "What is this, Mr. Carnegie?" he said. "Ah!" replied Mr. Carnegie, "a namesake of mine, one of the biggest quadrupeds which ever walked the earth." The King, who, as the Prince of Wales, had long served as a member of the Board of Trustees of the British Museum at once replied: "We must have one of these in the British Museum. Do not fail to secure us a specimen." Shortly afterward Mr. Carnegie wrote a letter to the narrator, and, after telling about the visit of the King, concluded by expressing the hope that the wish of His Majesty might be gratified, also suggesting that another specimen should at once be sought, and, if found, turned over to the British Museum. The writer knew that, aided by the best of prospectors, he might search for months and for years without obtaining another specimen so perfect as the one which had been discovered, and which was about to be set up in the Museum in Pittsburgh. Accordingly he wrote to Mr. Carnegie explaining the extreme improbability of promptly complying with His Majesty's wishes, and suggesting that a replica, an exact facsimile of the existing specimen, might be made; and that for purposes of study and exhibition such a replica might serve almost as well as the original. The fact that the making of such a replica would involve a great deal of care and ingenuity, and considerable expenditure of time and money, was made clear. After a month had passed a reply was received expressing doubt as to whether the Trustees of the British Museum would care to accept a replica, but at the same time expressing entire willingness, should this be the case, to defray whatever cost might be incurred. The writer at once addressed

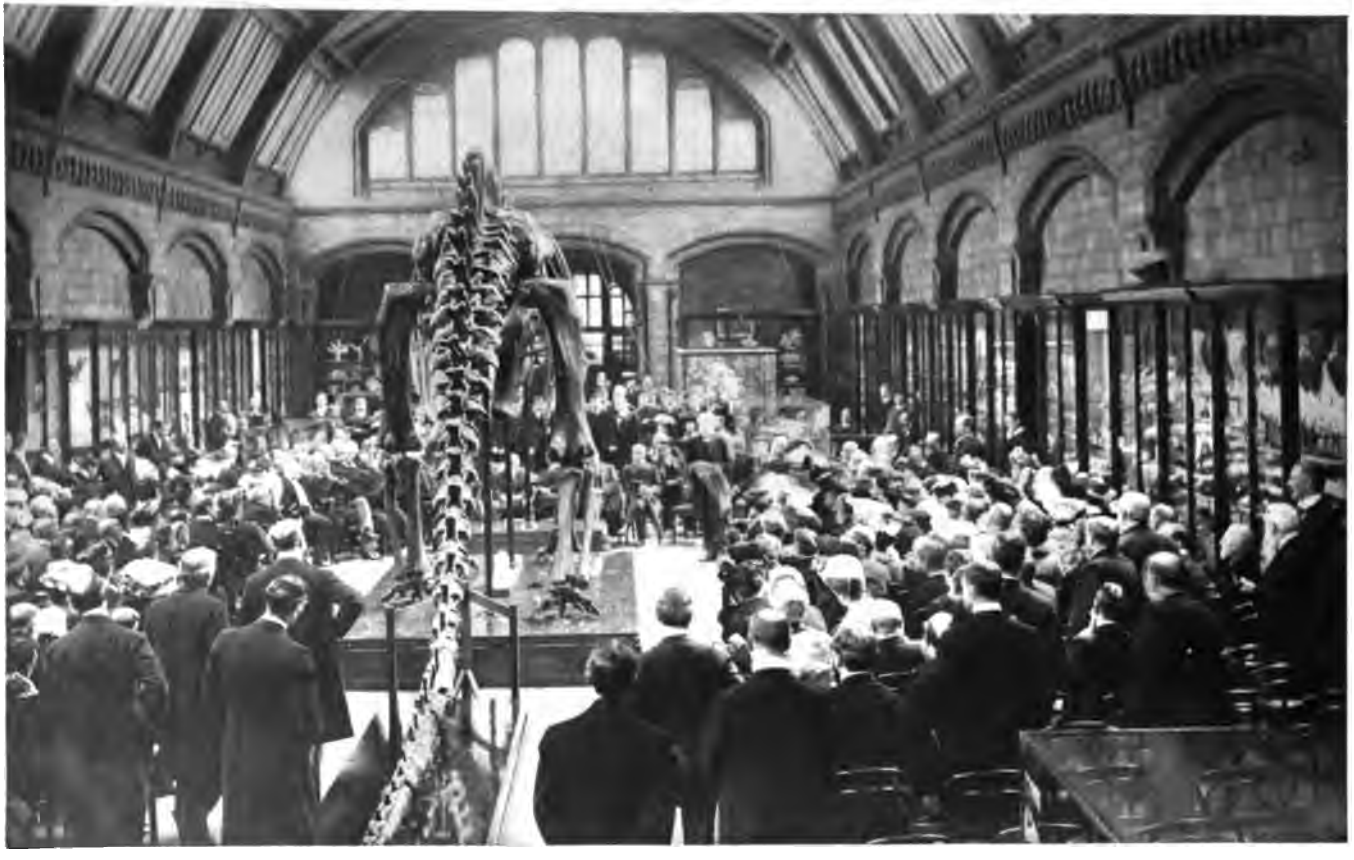
a letter to Professor Edwin Ray Lankester explaining the matter, and not long afterwards received through Dr. Lankester from the Trustees of the Museum in London a communication, in which they expressed their cordial appreciation of the generous thought of Mr. Carnegie, further stating that a suitable place for the display of the specimen would be found, and requesting the writer to immediately proceed with the undertaking.

Never before had just such a task as this been attempted. The skeleton measured eighty-four and a half feet in length. The bones, though hard, were in places delicate and extremely fragile. Difficulties in the use of materials were encountered. The great vertebræ, full of deep pits and crowded with slender projections, presented many problems in treatment which were vexatious. When at last the molds had been made, and casts of the more than two hundred bones had been secured, there remained the work of designing a steel frame upon which they might be assembled in their relative positions, and of providing plans for a base upon which the whole structure might rest. Professor J. B. Hatcher, Mr. A. S. Coggeshall, and their assistants were tireless. At last the greatest difficulties were surmounted. At that time there was no unoccupied room in the building of the Institute sufficiently large to permit us to erect the specimen within its walls. With great courtesy the managers of the Western Pennsylvania Exposition Society allowed us the use of one of their vacant halls, and there we set up the great skeleton preparatory to taking it down again and shipping it to London. Before the work was quite completed Professor Hatcher was suddenly seized by a fatal illness and passed over into the endless silence. It fell to the writer, who had taken an active

part in the work, to carry it to completion. When it was finished a few friends were invited to view the restoration before it was made ready for shipment to London. Some years afterward, in the city of Paris, I met Emmanuel Frémiet, the veteran sculptor. We were introduced to each other in the Museum of Natural History in the Jardin des Plantes, where one of the replicas of the Diplodocus had just been installed. Standing opposite the skeleton, Frémiet said to me: "I am not a paleontologist, and no doubt there is much about this thing which is interesting, which I do not understand; but I marvel at it as a piece of workmanship. From the standpoint of the sculptor, and more particularly as a sculptor of animals, I wish to express my admiration and my astonishment. How did you do it?" Coming from a man who perhaps was better able than any other to appreciate the technical difficulties which had been overcome, I have always felt that his words were cause for congratulation, and I have often with pleasure repeated them to my assistants. Our final success was largely due to these faithful men.

On May 12, 1905, in the presence of a brilliant assemblage composed of men in all walks of life, principally men of science, Mr. Carnegie presented the first replica we had made to the Trustees of the British Museum. The gift was accepted on their behalf by Lord Avebury, and pleasant words were spoken by a number of those who were present. The Diplodocus was the sensation of the hour in London, and the attendance at the Natural History Museum was reported to be the largest on any day since those which had immediately succeeded the opening of the doors of that great treasure-house of knowledge.

During the second week of April in the year 1907 the greatly enlarged buildings of the Carnegie Library and Institute in Pittsburgh were formally rededicated. From many lands came delegations of learned men bearing felicitations. Among these visitors was a company of eminent Germans, the representatives of His Majesty, the German Emperor, and also a company of distinguished Frenchmen representing their country. They did not come with empty hands. The German Emperor sent a right royal gift, consisting of books, engravings, and photographs, illustrating the arts and material progress of the Empire. The representatives of France likewise were the bearers of choice volumes, appropriately dedicated, and thus destined to be memorials of their visit. Upon the morning of the second day of the celebration the writer was summoned to the telephone by Mr. Carnegie, who said: "Did you not once tell me that when you were making the replica of the Diplodocus for the British Museum you had made a couple of additional castings?" The answer was in the affirmative. Then came the reply: "The kindness of our German and French friends on the present occasion prompts me to do something in return. If it should be thought appropriate to tender to the museums in Berlin and Paris the same gift we made to London, please take up the matter with the gentlemen who represent Germany and France, and arrange to do so." It did not take long to act. The German Minister of State, Herr Theodor von Moeller, and General von Loewenfeld were in a few moments in the office of the Director and a statement of Mr. Carnegie's thoughts was made to them. They appeared greatly pleased. Baron d'Estournelles de Constant and Monsieur Paul Doumer were shortly afterward apprised in



Presentation of the first Replica of the Diplodocus to the Trustees of the British Museum (Natural History), May 12, 1905. Lord Avebury speaking.

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like manner of the desire of the founder of the Institute, and they also expressed satisfaction. General von Loewenfeld with soldierly promptness resorted to the use of the cable, and on the morning of the following day presented a reply from His Majesty, the Kaiser, which was as follows:

GENERAL VON LOEWENFELD,
Carnegie Institute,
Pittsburgh, Pennsylvania.

Sprechen Sie Mr. Carnegie für seine Darbietung, die ich gerne annehmen will, und für die mir durch das Geschenk erwiesene Aufmerksamkeit, meinen wärmsten Dank aus.[1]

WILHELM.

From President Fallières, at a later date, there came in response to the personal representations made to him by the French delegates, a graceful acceptance of Mr. Carnegie's offer.

As a result of the events just narrated it came about that at the end of April in the year 1908 the writer, accompanied by Mr. Arthur S. Coggeshall, repaired to Berlin and there installed in the Royal Museum a replica of the Diplodocus, following that act in June by rendering the same service in the Musée d'Histoire Naturelle in Paris.

Meanwhile the Imperial Museum in Austria and the Italian Museum of Paleontology in Bologna had requested and been promised the same gift. The replica presented to the Emperor Francis Joseph of Austria was installed in the Kaiserliches Königliches Naturhistorisches Hofmuseum in September, 1909, and

[1] *Translation:* "Please express to Mr. Carnegie my warmest thanks for his offer, which I am happy to accept, and for the attention shown me by his gift. WILLIAM."

accepted in person by the Emperor; and the replica presented to the King of Italy was installed at Bologna in October of the same year.

While the writer was in Paris in 1908, he made the acquaintance of the Grand Duke Wladimir, the uncle of ~~His Majesty,~~ the Czar of Russia. The Grand Duke spent some time in the company of the narrator examining the replica, which was in process of being set up at the Jardin des Plantes, and in conversation about its discovery. Before taking leave he turned and said: "In view of the fact that Mr. Carnegie in his great generosity has been presenting these remarkable things to various countries in Europe, tell him from me that he must not overlook Russia." In due course of time I mentioned the incident to our Mæcenas, and he at once expressed himself as glad to act upon the suggestion. In the spring of the year 1910 a replica was installed in the Imperial Academy of Sciences at St. Petersburg. On all of these occasions the liveliest interest was shown not only by the learned, but by those in the ordinary walks of life. The Diplodocus has been called "the beast which has made paleontology popular."

The reader now understands why the long journey to the southernmost of the American republics was undertaken. It was for the purpose of setting up in the museum at La Plata the seventh reproduction of the colossal mesozoic reptile, the bones of which had been quarried from the Jurassic beds of Wyoming in the summer of the year 1899.

For various reasons the writer shrank from the journey. A multitude of uncompleted tasks stared him in the face; he feared the loss of the time which would necessarily be consumed; he was not in the best of health, and was in very low spirits. He endeavored

to draw back and to substitute another in his place, but failed. Finally, summoning his resolution to the task, he went, and now he is glad that he acted upon the promptings of his kind friend, Mr. Carnegie, who repeatedly urged him to go. The voyage acted as a restorative. For a tired man, suffering from mental and physical exhaustion, there is no journey which can be made from the port of New York which is more likely than this to prove beneficial. The run across the Atlantic to Europe is now made all too quickly. The traveler is no sooner installed in his cabin than he must begin to make preparations to disembark. The voyage to Argentina, occupying nearly thirty days, over calm summer seas, in comfortable ships, which from time to time call at points which are full of interest, is to be recommended to any one as tending in the highest degree to recuperate exhausted energy. Of the pleasures of this voyage, of the thoughts which it awakened, and the impressions which it made, the succeeding pages will tell.

CHAPTER II

AT SEA

"Thou boundless, shining, glorious sea;
With ecstasy I gaze on thee."

Friedrich Leopold, Graf Stolberg.

PROMPTLY at half-past nine on the morning of August 20th the cables of the ship *Vasari* were slipped, and she made her way from her berth at Pier 8, Brooklyn, to the lower harbor and cast anchor opposite the Statue of Liberty. Large steamers docking in Brooklyn are forced to quit their berths before the tide begins to set toward Long Island Sound, as, otherwise, they might be driven against the abutments of the narrow channel before they could be pointed and brought into position to use their full power against the stream. An inspection revealed the fact that none of the luggage belonging to the writer and his assistant was on board. Appeal was made to the purser. "Were your things on the dock?" he said. "They were. We brought them ourselves. Here is the receipt of the baggage-master." "Well, make yourselves comfortable! They will be found when we get under way. I have often met people like you, who raise a fuss because things are not in sight. Your stuff is on board. Go and get your lunch and keep cool. I will bet you ten dollars the things are on the ship!" The prospect of making the voyage to Argen-

tina, lasting a month, with only two collars and a toothpick as a wardrobe was appalling. We did not "make ourselves comfortable," we did not "keep cool." We rummaged the ship and visited every stateroom. We had the baggage-room unlocked and inspected its contents. We went down into the hold. We "raised Cain." Our baggage was not on board. Resort was had to the wireless telegraph, and the tug, which came to take the agent of the company ashore, finally brought our trunks. The jolly purser confided to me afterwards that when the tug came alongside he overheard me say "There are my things!" and that he forthwith "took a sneak." We sailed in peace.

The pilot was dropped. The ship was pointed for Cape St. Roque, the easternmost projection of the South American continent, and we steamed away. A few sails were dimly seen at sunset under the shadow of a thunder-storm, which was hanging over the coast of New Jersey. These were the last sails to greet our eyes for fourteen days until we came in sight of the harbor of Bahia in Brazil.

The path of the ship led immediately into the Gulf Stream, the eastern edge of which we crossed after we had been out three days. These were the hottest days of the entire voyage. After we had traversed the Gulf Stream we presently came into the region of the northeast trade-winds, and a refreshing breeze blew day after day, imparting coolness to the staterooms. In the region of the "doldrums" or equatorial calms, there was, contrary to expectation, a pleasant wind, and after we had doubled the eastern point of South America we came into the region of the southeast trade-winds, and leaving the sun behind us to the north, reached away during the last days of our jour-

ney into the waters of the South Temperate Zone. We faced no stormy weather during the voyage. Not a single person, man, woman, or child, in a company of over one hundred and fifty first-class passengers, complained of sea-sickness. The "fiddles" or table-racks were never used in the saloon, and the purser informed me that only once during the past three years have they been called into requisition, and then it was on a midwinter trip, as the ship was approaching New York. "I was afraid," he said, "that we could not find the fiddles on that occasion, as they had been so long stowed away, but they turned up after we had made a hunt for them, and were in use for two meals." It is impossible to choose any route out of New York harbor which is more certain than this to lead into pleasant weather.

The life on our steamer in most respects was like that on any other great liner, with certain exceptions. On the North Atlantic, between New York and Europe, in the middle of the morning passengers are offered hot broths and tea and coffee, and in the middle of the afternoon are served with warm drinks, even in summer. On the *Vasari* clam-broth and bouillon were replaced by ice-cream; the tea was iced; and most passengers elected lemonade instead of coffee. On the North Atlantic, even in July and August, rugs and heavy wraps are much in evidence; on the *Vasari* the ladies toyed with their fans and danced at night in airy costumes. Nobody thought of closing the ports until we had passed the equator, when it began to be cool at night.

The first day out a huge canvas tank was set up on the forward deck and from time to time was filled with fresh water from the sea. Here every morning many of the passengers, arrayed in bathing suits, came for a

grateful and refreshing plunge. The tank every afternoon was a welcome resort for the boys and girls on board.

Of children the ship had its full quota. There were five baby-carriages on board and five jolly babies were daily trundled to and fro, cooing, laughing, and kicking their legs in the air. Of larger children there were about thirty, who had many a game, and many a romp. One of the pleasant incidents was a dinner for the children, which was given the day before we reached Rio de Janeiro. On that occasion it fell to the lot of the writer to award to the young people the prizes which they had won in the "potato races," the "egg-and-spoon races," and the games of ring-toss and shuffle-board, which had been played on deck. On the evening of the same day awards were made to their elders, who had joined in like sports, or who had won prizes in the "bridge tournaments" and in the masquerades which had taken place. There was not a little musical talent on board; and a couple of enjoyable concerts were given in which professional and amateur performers joined amicably, and won the gratitude of their fellow-travelers.

The company in the first cabin included a large number of men belonging to the different branches of the engineering profession. They were either going out for the first time, or else returning, to take charge of work upon the railways, or the great electrical enterprises which are being developed in South America. A still larger number of the passengers were representatives of firms engaged in the manufacture and sale of agricultural machinery. One of these men was a veteran, and repeatedly had visited the interior of South America, going from ranch to ranch giving instruction in the use of American mowers, reapers, and steam-plows.

Originally beginning life as a jeweler in a small town in western New York, he had drifted to Chicago and found employment with a firm engaged in making agricultural implements, and years ago had been sent to Argentina as a demonstrator. He was a typical "New York Yankee," and the recital of his experiences, told in his drawling vernacular, interlarded with Spanish expressions, was infinitely quaint and droll. The learned professions were represented by several physicians, lawyers, and clergymen, the latter missionaries returning to their charges after their furloughs. All were men of culture and refinement with whom it was a pleasure to converse.

The "Crossing of the Line" occurred on August 31st. The event had been anticipated by many with interest and curiosity. One gentleman, speaking about the matter, remarked: "We shall no doubt feel it an hour or two before we get there, and probably an hour or two afterward." As the equator is an imaginary line, what my friend expected to feel I am at a loss to imagine. Another fellow-voyager approached me and seriously inquired "how long I thought it would take us to get over the line." When I told him the feat might be accomplished in about a second of time he looked mystified and even disappointed. I did not press him to explain himself. It would hardly have been polite to do so. To what sort of nautical acrobatics he was looking forward will ever remain a puzzle to me. On the morning of the eventful day a proclamation was read at breakfast, announcing that Father Neptune and his daughter, attended by their court, would appear on board at two o'clock in the afternoon, and then proceed to initiate into the mysterious rites of his realm all those who were for the first time invading his do-

mains south of the equator. During the forenoon of the day there were many conferences between the "committee of arrangements" and the proprietors of a circus, who were traveling as second-class passengers. At the appointed hour a procession took place upon the upper deck. It was headed by Neptune and his daughter. Neptune was clothed in a sea-green robe, held his trident, wore a crown of gilded pasteboard, surmounting his flowing locks which were composed of strands of oakum. The discerning eye detected under the disguise the rotund outlines of the purser; and under that of his daughter the somewhat diminutive form of the second steward.

The reason for the frequent conferences, which had been held with the owners of the side-show in the morning, now became plain. The theatrical properties of the troupe had been brought into requisition. The chief steward arrayed as a ballet dancer, and the barber, wearing the mask of a clown, on his head a fiery red wig and in his hands a razor three feet long made of gilded wood were prominent among the merrymakers. A motley company composed of the ringleaders in "the smoking-room crowd" wearing masks and strange disguises followed. A platform had been erected in front of the swimming tank. On it the chief steward, provided with a whitewash brush and a big bucket of paste, took his place. Beside him stood the barber, stropping his gigantic razor upon a yard of burlap tied to a derrick-boom. The first victim was a young lady who seemed to feel that it was her duty to be initiated. She came forward smiling, wearing a silk gown. She seated herself upon the barber's stool. Her head was anointed with paste, the barber made a few passes with his mimic razor, and then in a twinkling, heels

over head, she was flung backward and soused in the tank by the minions of Neptune. The ship's surgeon and the fourth officer were the next victims. They were followed by others until the tank was full. Those who were floundering in the bath now resolved upon reprisals. The first attack was made upon the chief steward. He was seized from behind and waltzed into the tub, from which he emerged looking like a drowned rat. After him came the barber, from whose pockets, crammed with colored papers, oozed bright green, pink, and yellow dye-stuff. "Beau-ti-ful as the rainbow!" he exclaimed, as he crawled out of the tank and again took his place on the platform, and began to strop his razor. The fun now rose to its height. One by one the company of merrymakers were caught and protesting, struggling, kicking, rolling, were brought to the tank and flung over its sides. It no longer contained sparkling water, but a broth of paste, paint, floating wigs, and other accoutrements. Those who had met their baptism in it had an hour's work before them in their private baths to remove the stains of their experience. Each reveler received a diploma, properly signed and sealed by Neptune, attesting the fitness of the recipient to sail "the seven seas."

The ocean is glorious, but nowhere more so than in the equatorial regions. Each day of the voyage presented a panorama of sea and sky in which the play of color and of shifting lights was dazzling. The water of the deeps of the tropical Atlantic, when seen from the prow of the ship, glows with color like the breast of a bird of paradise. Dark purples, lapis lazuli, resplendent greens, soft reds, and rich bronzy tints melt into each other and shift and change with every passing cloud and every motion of the waves. The depth

Crossing the Line.

Some of Father Neptune's Minions. The Chief Steward Arrayed as a Ballet Dancer.

Crossing the Line.

The Chief Steward is Tumbled into the Bathing-Tank.

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and intensity of the blue tints of the tropical ocean provoked comment from even those who otherwise appeared indifferent to the charms of nature. At night under a full moon the reflection of the clouds on the dark sea was infinitely tender and pleasing. During the period we were on the Gulf Stream and until we were beyond the mouth of the Amazon the clouds were a splendid study. They are prevalently of the stratus or cirro-stratus form on the North Atlantic, but over the warm seas through which we passed there hung great masses of cumulus, "thunderheads," as I have often heard them called, like those which rise over the land in hot midsummer days. The long cold streamers of the North were replaced by huge columns of soaring vapor, over which the sun cast a robe of splendor. Below them like a purple veil often hung the rain, showing that they were being forced to return a part of the burden of moisture which they were trying to carry away. I had looked for fine displays of electricity in tropical latitudes. Strange to say the only lightning I saw during the outward voyage appeared over the coast of New Jersey. "Jersey lightning"[1] is famous. However, upon the return voyage we witnessed a magnificent electrical storm as we were approaching Bahia. We were close to the land and the night was very dark. The sea was calm. All at once a flash of lightning illumined the sky and revealed for an instant the hills, the beach, the palm-trees on the shore; and then instantly the pall of darkness was thrown over the whole enchanting scene. We waited for a minute

[1] This allusion should be explained for the benefit of those who have not pursued their studies in the Princeton Theological Seminary. In the Neo-cæsarian dialect "Jersey lightning" is a synonym for "bad whisky."

and then again the fires of the sky lit up the sea and the land. It was an amazing and a charming sight, to see the world, bathed as in sunshine, rush into view out of the darkness and then disappear. It was as if a series of magnificent views were being projected upon a dark screen by the hand of a celestial worker of wonders.

The writer found his favorite perch at the prow of the ship. There, either standing or sitting, he passed many hours watching the waves and scanning the skies. He was not without pleasant company. Many of his shipmates discovered the same point of vantage, and we discussed together many things which were suggested.

The ocean is the gift of the nebula out of which the earth was formed. There was a time when it did not exist, except as an immense mass of heated vapor, which the hot ball of matter, about which it clung, refused to allow to rest upon its surface. But the earth slowly grew cold; the raindrops which fell upon it ceased to hiss and sizzle on its red-hot rocks. They drenched the mountain tops; and after a while formed brooks and rivers, seeking lower levels in obedience to the law of gravity. Ponds, lakes, seas, and oceans were accumulated in the hollows. It was a long process. Millions of years passed before it was consummated. As the water fell, it leached their salts from the slowly disintegrating rocks, and carried them into the seas. The ocean is a great dripping-pan, the ultimate receptacle of the waste of the land. The ocean is a grave; at its bottom rest the remains of unnumbered and innumerable things which once lived in its waters. Much of the land to-day is sea-bottom from which the water has been withdrawn. The marbles, the limestones, and the chalks consist of the consolidated remains of the dead which once tenanted the seas.

The ocean is the mother of life. The destroyer has also been the nurse. Without water there can be no life Lean over the prow and listen to the sound of the rushing waves. It recalls the noise of the leaves in the forests when the winds are passing over them. I like to imagine, as I listen, that the sea is prophesying, and declaring that her gift to the earth is to be the woodlands and the groves. The sun kisses the sea, and the spirits of the waters rise like Aphrodite from the foam, and, veiled in fleecy clouds, flee to the land, sprinkling the sweet distillations of a million leagues of purple water over the thirsty soil, and forthwith Flora awakens and weaves her woodland temples garlanded with blossoms. The lowly mosses of the North, the pines of New England, and the palms of Brazil are the gift of old ocean.

Sir John Hunter once said: "A man is compounded of about twelve pounds of mineral salts and two buckets of water." The statement is chemically correct. Every one of us contains in his body a part of the sea, loaned to us for the time being and brought to us as a gift by the clouds and the rain. The earliest forms of animal life upon our planet were marine. From out of the seas came the first "swarms of living creatures"; they were followed in due time by the "fowls of the air"; and later by the "beasts of the field." The final product of evolution is man. How recent, when studied from the standpoint of the geologist is the history of our race! I stood under the Arch of Titus in Rome a few years ago. I looked up and read the inscription. I said to myself, "How modern! This arch was built less than two thousand years ago; the great reptile, the reproduction of which I am bringing as a gift to the King of Italy, lived fifteen millions of years ago; but

he was even then a comparatively modern form of life, the product of an evolution which had been going on for æons before his advent!"

Will there ever come a time when the prophetic declaration, "There shall be no more sea," shall be fulfilled? It is possible. Swinging out there in the night is the full-orbed moon. There are no seas or oceans upon it, but it is literally covered with volcanoes. A glass of only moderate power reveals the peaks and the craters. These volcanoes are the best proof possible that at one time there must have been an abundance of water on the surface of the moon. We know how volcanoes are formed. Water sinking down into the earth, which is still hot in its interior, is gradually heated and becomes steam. When the pressure of the steam reaches a certain point there is an explosion and a pyramid of mud or of lava is thrown up. We know that water is necessary to the formation of lava. The constituent minerals in the primitive rocks in the presence of water may be converted into lava at comparatively low temperatures. The volcanoes on the moon show that this little attendant globe was once covered by seas. They are invisible now. What has become of them? They have been simply sucked down into the rocks as the moon grew colder and colder, just as water is sucked up by a sponge. The same thing may happen to our old world in future ages. And the air may at last go the way of the water, as it apparently has gone in the moon, which has no atmosphere.

Moonlit Cloud on the Equator.
(From a thumb-box sketch by the author.)

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CHAPTER III

LIVING THINGS IN THE WATERS

"In the seas and fountains that shine with morn
See, Love is waking, and Life is born,
And breathing myriads are breaking from night
To rejoice, like us, in motion and light."—*Bryant.*

WE saw but little life during the voyage. Now and then we caught sight of a school of porpoises in the distance, and on several occasions as I stood at the bow of the ship I observed these creatures racing with the great vessel as it forged through the waves. Once there were ten of them, five on each side, and they kept up with the steamer for twenty minutes, although she was going at fourteen knots an hour. They hardly seemed to move their bodies as they made their onward rush, except when they took a plunge. Just before they rose for their leap out of the water they made three or four rapid strokes of the tail from side to side, and thus propelled shot forth from the wave into the air and descended at a steep slant, only immediately to rise again. The open nostril or blow-hole was conspicuous as they emerged. The bodies of the two biggest specimens appeared to be scratched or scarred, as if they had been fighting. The race they made with the ship was quite exciting but at last they apparently became tired, and, shooting away to the right and to the left, disappeared.

Hearts of muscle could not keep up in the race against the tireless heart of steel, which unceasingly pulsed within the great ship.

For two days before we reached Bahia whales were rather numerous. We often saw them spouting. The water driven from their nostrils looks like a puff of rifle-smoke. None of those which I happened to see was very near to the ship, but an excitable gentleman informed me one day that in the morning, while I was at breakfast, a whale had been seen alongside, "and," he said, "he stood up on his hind legs and looked me full in the face." I naturally regretted having missed so marvelous a spectacle. In my wanderings to and fro upon many seas I have often seen whales. The largest number which I ever saw at one time was off the Banks of Newfoundland, in the fall of the year 1877. We fell in with a school of sixteen finbacks. Some of them were huge fellows. Having "the freedom of the rigging," I went aloft, and from my lookout near the masthead I had a fine opportunity to observe them. They came quite close to the vessel, and one of them, when within half a cable's length, breached, throwing himself almost entirely out of the water. The sea was quite calm, and it was exceedingly interesting to look down into its glassy depths and follow the movements of the monsters as they raced with the ship. The racing instinct appears to be almost universal among animals. I have observed it in the case of dolphins, porpoises, and whales. It is common in dogs, as everybody knows. I have even observed it in the case of butterflies. Riding with a friend one afternoon from La Plata to Ensenada, I noticed that specimens of the common Thistle-butterfly (*Pyrameis*) frequently rose from beside the road and flew along, racing with

the carriage. I had my butterfly-net with me, and succeeded in bagging several specimens. If they had not pursued us, they would not have been caught. The small boy who runs along the pavement trying in a burst of speed to keep up with a passing automobile reveals the survival in him of the same instinct which is shown by the lower animals. This racing habit is curious.

But we were speaking of whales. Bahia is a whaling station, and we were told there that the catch made by the whalers at that port during the past summer had been exceptionally good, and that over forty large whales, each yielding five hundred dollars' worth of oil, had been taken by the local fishermen. They go out in small craft, harpoon their mighty quarry, and then tow the carcasses to the shore, where the blubber is flaked and tried out.

The only other mammals which we observed during the voyage were seals. These we saw in considerable numbers at the mouth of the Rio de la Plata. On our way from Montevideo to Buenos Aires at intervals the shy creatures would raise their heads from the muddy water, gaze for a moment, and then dive out of sight.

There was a remarkable absence of birds during the early part of our voyage. I do not recall having seen a single bird upon the Gulf Stream. Now and then as we approached the southern continent we saw a few petrels, but it was not until we came close to the shore that birds became numerous. During the last days of the voyage, after we had left the tropics behind us, several species of gulls appeared in numbers straggling in the wake of the ship, and also numerous Cape-pigeons (*Daption capense*, Linn.), the elegant black and

white plumage of which made them very conspicuous as they pattered to and fro over the waves, or rose and came circling about the ship. In the muddy waters of the Rio de la Plata cormorants were common.

Shortly after entering the Gulf Stream, and thereafter until we reached the Tropic of Capricorn, flying-fishes were exceedingly numerous. They ran in great schools. Standing at the prow it was highly interesting to watch them as they rose from the bow-waves and fled from the advancing ship. Some were less than an inch in length and when on the wing looked like small dragon-flies darting out of the water; others were as large as a mackerel. Occasionally hundreds of them would rise up together and shoot away. Their flight suggested that of a covey of quails. They often flew to a great distance. Now and then I noted individuals which must have flown a hundred yards, and sometimes, I think it is no exaggeration to say, twice that distance. Everything seemed to depend upon the way in which they met the wind on rising from the water. I observed them very carefully to detect whether in their flight they vibrate their fins, but they apparently never did this, except just at the instant when they emerged from the water, when the great pectorals seemed to quiver for an instant as they met the air. It looked as if they were trying to shake off the drops still adhering to them. The tail is used to give direction and to maintain proper poise. A hundred times I noted that, as they flew, they just touched the tops of the waves with their tails, thus keeping themselves pointed at the proper angle to the wind. One fine big fish as he came out of the water rose perpendicularly into the air like a kite against the breeze. It looked for an instant as if the wind, which was very strong, would blow him over backward,

but a big sea passed under him; his tail touched the crest of the wave, and he was thrown forward into the proper angle toward the wind, and then, rising like an aëroplane, started off, making the longest flight I saw on the whole voyage, almost disappearing in the distance before he dropped, head on, into the side of a big roller. Flying-fishes are very good to eat. The flesh is firm and tastes like that of a Spanish mackerel. On the return voyage we took on a supply of flying-fishes obtained in the market of Bridgetown, Barbadoes, and for several days the bill of fare at dinner enumerated among other comestibles "filet of flying-fish."

Standing at the prow of the ship we now and then saw sea-pens (*Pennatula*) floating in the water. They were deep purplish red in color, but were not very numerous. Occasionally we saw "Portuguese men-of-war" (*Physalia*), their white floats followed by their long purple processes streaming behind them. Ugly things they are to handle, and the first officer told us a story about one of his inexperienced shipmates who some years ago had seen one of the things in the harbor of Bahia and seized it with his naked hands. The terrible nettle-like stings infected his right hand and arm, which became inflamed and swollen so that for over a week he was incapacitated for duty. Now and then we saw masses of *Vellellidæ*, which are closely related to the Portuguese men-of-war. They were not, however, nearly as numerous as I have seen them on the Pacific, between Vancouver and Yokohama, where untold millions of them at times cover the sea for miles. They are quite small, not more than an inch in diameter. Their short tentacular processes when examined near at hand are of a beautiful blue color, but as they appear against the white foam of the bow-wave they resemble

bits of charcoal churned about and rolling over in the water.

One phenomenon which awakened my astonishment as we went along the coast south of Santos deserves mention. When over thirty miles from the land spider-webs came floating through the air. These spider-webs were snowy white and were easily seen. I called attention to them at the time, and afterwards when on land I found that they were quite numerous. I did not secure any of the spiders which make them. But I saw them floating in the air over the pampas just as I had seen them floating over the ocean. Butterflies and other insects have frequently been noticed at great distances from the shore. Carried into the upper regions of the air they may be blown far out to sea. I have in my possession a hawk-moth, which flew on board a ship and was captured four hundred miles from the land.

Only once did we witness a display of the phosphorescence of which so much has been written by those who have sailed in the tropics. The night was intensely dark, the moon having not as yet risen. About the prow of the ship and along its sides there appeared to be great balls of fire flashing in the water. The top of every wave was illuminated, and far away toward the horizon every whitecap seemed to be twinkling with stars. The light is emitted by various forms of marine life. In this case it was of course impossible to decide what creatures they were which were giving forth this wonderful light, but it is quite likely that we were plowing our way through swarms of large jelly-fishes, or medusæ, some of which emit phosphorescent light.

CHAPTER IV

THE SOUTHERN HEAVENS

"A million torches lighted by Thy hand
Wander unwearied through the blue abyss;
They own Thy power, accomplish Thy command,
All gay with life, all eloquent with bliss."—*Derzhavin.*

AT night, when we were not watching the clouds and the sea, we gazed at the stars. Less than a week after sailing the Polestar sank so low toward the misty horizon behind us that we could no longer see it. One by one the familiar constellations of the north disappeared from view. We began to look for the appearance of the Southern Cross. One evening just after sunset we saw "the pointers," Alpha and Beta Centauri, but the Cross had already set. On the following evening we made out the Cross just above the horizon. It was a distinct disappointment to many who beheld it for the first time. "The flaming Southern Cross," about which so much has been said and written, cuts a rather sorry figure in the sky. The captain of the ship said to me as we stood looking at the constellation: "It is not a true cross." The stars are not located in relation to each other in such a way as at first glance to suggest the outline of a symmetrical cross; and furthermore they are too widely separated from each other to make the constellation impressive. In fact there are a couple of other groups of stars in the south-

ern heavens which come much nearer forming "crosses," and one of these groups is known as the "False Cross." Only one of the stars of the four composing the Southern Cross is of the first magnitude; two are of the second magnitude, and the fourth is a star so small that it is scarcely visible except on very clear nights. During the greater part of our time at sea only three of the stars could be seen without a glass, and the constellation suggested a "triangle" rather than a "cross." We soon grew tired of looking at *Crux australis*.

But if the Southern Cross was a disappointment, the heavens above us were not. There were remarkably fine displays of the zodiacal light just after sunset; and when the afterglow had faded, the skies seemed to be fairly palpitating with stars. Some of these are extremely brilliant. Alpha Centauri, one of the "pointers" of the Southern Cross, is the fixed star which is nearest to our solar system. It is four and four-tenths "light-years" distant from us. That is to say, it takes light, traveling at the rate of 186,327 miles a second, four and four-tenths of a year to come to us from it. Sirius, the Dog-star, is approximately eight and eight-tenths "light-years" distant from us, almost exactly twice as far away. Alpha Centauri is twenty-five and a half trillions of miles from our sun. It would take a railway train, traveling with the speed of the Twentieth Century Limited, and making no stops, fifty-two millions of years to go from our sun to Alpha Centauri. There does not appear to be any danger of an immediate collision with the nearest fixed star. I am glad I have seen it. The outlook is reassuring, and I can go to bed at night and sleep peacefully.

"The Clouds of Magellan," stray universes, widely separated from the Milky Way, which they resemble,

though much smaller in extent as seen from our earth, attracted our attention. Detached groups of suns, so far away that they seem to be drawn together and melt into a pale haze in the midnight sky, they teach impressively the vastness of that immeasurable domain through which run the unchanging laws of Him who said, "Let there be light." How infinitely little man appears when we contemplate the heavens in full view of the teachings of modern astronomy. If the Psalmist could say as he gazed at the sun, moon, and stars: "What is man that Thou art mindful of him?" how much more reverent ought we to be as with bared foreheads we look up into the purple vault above us and reflect upon the illimitable distances, the tremendous velocities, and the prodigious momenta of the uncounted suns and worlds which are threading the mazes of space!

Standing under the stars the paleontologist cannot fail to recall that his astronomical brethren in a certain sense are also paleontologists, "students of ancient things." We have been told that some of the light which touches the human retina, as we stand at the eyepiece of a telescope, must have started on its earthward journey from the remoter points of the universe millions of years ago. In other words, when we peer through a powerful telescope directed toward the more distant parts of that great complex of which we are ourselves an insignificant portion, we do not see things as they now are, but as they were long ago. Could we behold the Clouds of Magellan exactly as they are at the present instant of time we might discover, because light is so laggard and has so far to come, that changes have occurred of which we as yet have no intimation, and concerning which information will only be received

in our world in future ages. The remoter heavens at which we gaze are not the heavens which now are, but the heavens which once were. The astronomer, like the geologist, is to a certain extent the student of an ancient history.

Certain stars attracted immediate attention by their brightness. One of my fellow passengers, who, like myself, was fond of "star-gazing," approached me one evening with the request to give him the name of the "planet" to which he pointed. Its steady and brilliant light justified his momentary belief that he was looking at one of the planets, but it was Sirius. Even more wonderful to me than Sirius was Canopus, that mountain of blue fire, which after midnight glowed in the sky with a splendor second only to that of the planet Jupiter. If anywhere there be a central fountain of fire before which other suns pale into insignificance, surely this is it. Although it shines so resplendently, astronomers have not as yet been able to compute its distance from our solar system.

We saw a number of meteors. None of them were very brilliant. It is really surprising how few of these things ever reach the surface of the earth. Most of them cannot be more than a few grains in weight. They come flying out of the deeps of space, are caught by the attraction of the earth, rush down toward its surface but the friction generated as they move through the air produces such a heat, that they ignite in the presence of the oxygen of the atmosphere and burn up before they reach the lower layers of the all-enveloping air. My dear old friend, the late Henry Ward, scoured the world in quest of meteorites. I loved him very much. I have on my desk a paper-knife made out of a sliver of a meteorite, which fell

at Toluca in Mexico, and which he presented to me. I do not know whether there is anybody else who cuts open his magazines with a piece of a star. The Ward–Coonley collection, which was the result of a great expenditure of time, effort, and money, contains specimens representing several thousand "falls." It is one of the most complete collections of its kind now in existence. Ward often visited South America in quest of specimens about which he had heard. He used to tell amusing stories concerning his adventures. No hardship was too great for him to encounter if thereby he could only add another specimen to his collection. A great many meteorites have been found in South America. There is a big one in the museum at Rio de Janeiro, which came from near Bahia. When I was a student, the place which Ward occupied in later years as a collector of meteorites was held by my teacher, Professor Charles Upham Shepard of Amherst College. He was running a race with Professor Maskelyne of England in an effort to make the most complete collection of meteorites in the world, and before his death claimed with apparent justice that the only collection exceeding his own was that preserved in the Imperial Museum in Vienna. The dear old doctor used to lecture most entertainingly and instructively upon the composition of these fragments of stellar matter which he had gathered. Among them, I recall, was a small meteorite which he obtained in a curious way. It fell one afternoon in the fall of the year and struck the roof of a barn, where two men were engaged in flailing buckwheat. It tore away a number of shingles from the roof, bounded off, and fell into a field near by. A small dog saw it fall and rushed out into the field and began pawing about the hole. The men,

alarmed by the loud report, rushed out, and, attracted by the peculiar actions of the dog, went to the spot, and after a while succeeded in digging out the stone, which Professor Shepard subsequently bought. Upon concluding the recital of this story, the Professor was accustomed to remove his spectacles, and, wiping them with his handkerchief, remark: "That was a wise dog; he recognized the Dog Star as soon as he saw it." The feat performed by the dog in this case was, however, surpassed by my friend, Professor O. C. Farrington of the Field Museum in Chicago. A few years ago hearing of a fall, which had taken place in one of the Western States, he made a series of computations which led him to infer that the aërolite must be lying approximately in a certain position upon the earth's surface, and then taking a train from Chicago, he went out upon the prairies of Kansas, and after tramping around for a time, found the very spot and dug it out of the ground. An equally curious case is that of the Saline Township meteorite, as it is called. Mr. S. A. Sutton of Hoxie, Kansas, was frightened one night by a blinding light and a loud noise, and thought the lamp was exploding in the front hall of his house. He sprang to his feet, and then saw through the window a great trail of dazzling light in the sky and realized that it was a meteorite which had passed overhead. Being a surveyor and mathematician he made computations, and at last by their help succeeded in locating the stone, which is now in the Field Museum. It weighs more than sixty-eight pounds.

It is fortunate for the inhabitants of the earth that there is so little flotsam and jetsam in space and that meteoric bodies are as rare as they are. It would not be a pleasant thing to be perpetually colliding with the

remnants of smashed worlds. In 1827 a man was killed at Mhow in India by a falling meteorite. Strange things are always happening in India. Where people starve to death by tens of thousands, and thousands are annually devoured by tigers and killed by snake-bites, it would be singular if some one were not now and then knocked down by a falling star. The population in India is crowded, you know.

When we had crossed the Tropic of Capricorn the fact that we were in another hemisphere began forcibly to impress itself upon us, as we looked at the heavens. Orion in September stood in the south with his heels toward the zenith and his head toward the horizon, just the reverse of what is true in the north when this constellation is visible. The tail of the Scorpion pointed upward. The "Man in the Moon" likewise had changed his apparent position. His eyes appeared to be toward the eastern horizon, as if he were lying on the side of his face. The sun shone in the north and our shadows pointed toward the south. Everything was topsy-turvy. But we were on the underside of the world, and seeing things as we might see them at home if we always walked on our heads.

I have a friend who has a telescope with which he beguiles his evening hours. One summer night the man-of-all-work, a German, who had been a couple of years in America, having put the lawn-mower into the tool-house, came and stood near by, evidently filled with curiosity as he saw his employer training his glass at the skies. He was invited to take a peep, and explanations were given. Presently he turned and with evident amazement and pleasure exclaimed: "Mein Gott! dose vas de same shtars I used to see in Tschermany!" Of course! Both Germany and the United

States lie north of the equator. But when one arrives below the equator one sees constellations different from those which fill the northern heavens. Many of them have been defined and named in comparatively recent times, and bear designations which are quite unfamiliar to us who have always done our star-gazing "north of the line." We are familiar with the Greater Bear and the Lesser Bear, with Cassiopeia and Andromeda; we know Orion and the Greater and the Lesser Dog; but we have never seen *Pavo*, the Peacock; *Apus*, the Bird of Paradise; *Horologium*, the Clock; and *Equus Pictorius*, the Painter's Easel. The Air-pump, the Sculptor's Workshop, the Telescope, and the Microscope are constellations new to us. We do not see these and twenty other constellations either in Germany or the United States.

The progress made in astronomical science during the last century has been as great as that which has been made in any other department of science. Much of this progress is due to the refinements in instrumental equipment which have been made possible by the ingenuity of men who have had at their command the mechanical devices of the nineteenth century. The huge telescopes which are used to-day could not have been constructed in those ages which lacked the steam-engines, the lathes, the screw-cutting machinery, and other appliances which are found in modern workshops. The science of astronomy owes a great debt to such consummately skilled mechanics as Alvan Clark of Cambridge and others. The invention of the spectroscope and the application of the knowledge acquired through its medium has vastly extended our acquaintance with the physical composition of the sun and other celestial bodies. Many of the secrets of the skies

have been wrested from the darkness by the help of photography. In fact the greater part of the work which is being done to-day in the field of astronomical research is being accomplished by means of specially adapted photographic cameras. Photographic negatives are more sensitive to the action of light than the human retina, and the records which they furnish are more correct, and are of course permanent. "The personal equation" is to a certain extent eliminated in photographic records. No two men see things exactly in the same way; in fact, no two pairs of eyes are exactly alike. The testimony given by astronomers who have reported what they have seen, when standing at the visual end of the telescope, is as variant as the testimony given by witnesses in lawsuits. The camera, on the other hand, if properly adjusted and properly handled, gives sure results. Astronomical research in these days has resolved itself very largely into a quest for good photographic negatives of the heavens. The popular conception of the astronomer as sitting at the eye-piece of a great telescope, sweeping the depths of space with eagle eye, is reflected in the well-known lines of Keats:

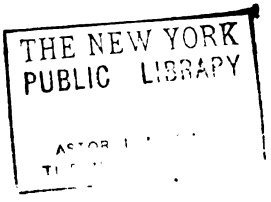
> "Then felt I like some watcher of the skies,
> When a new planet swims into his ken."

"The watcher of the skies" nowadays is represented by a small piece of glass, coated with a properly prepared emulsion, upon which the distant heavens are focussed, and which is exposed for minutes or hours at a time to the starlight. The final result is a negative, which presents the appearance of an assemblage of white flyspecks upon a dark ground. When one of these flyspecks is discovered to have become a little elongated

the suspicion arises that it may be a moving body, its orbit traceable upon the background of the apparently motionless fixed stars; and when it is found after successive exposures to have changed its relative position from night to night and week to week, it is finally announced to be an asteroid, or the satellite of one of the larger planets, as the case may be. There is then proper joy in the astronomical world, the newspapers herald the discovery in large head-lines, the lucky finder is made a Doctor of Science, and has his name enrolled among the immortals. The negatives meanwhile are stored away in the vault of the observatory, and common men go on toiling and moiling as before. It has been my pleasure to be personally acquainted with a great many of the leading astronomers of the past and present generation on both sides of the Atlantic. With some of them I have been intimately associated, and I have learned to entertain for them and their work the highest admiration. No study is more elevating and inspiring than astronomy. It may, however, be questioned whether, viewed from the utilitarian standpoint, the results which are being achieved by it are as valuable to mankind as those which are being achieved in some other branches of research. In proportion to the large expense which is necessary in order to add a little to our knowledge of the distant universe what may be learned seems to be of less importance to humanity than the knowledge which remains to be secured nearer at hand by the physicist, the chemist, the geologist, the botanist, and the zoölogist.

But it is eight bells and time to turn in!

Sketch in the Harbor of Bahia.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CHAPTER V

A DAY IN BAHIA

"Yon deep bark goes
Where traffic blows,
From lands of sun to lands of snows;
This happier one
Its course is run
From lands of snow to lands of sun."
T. Buchanan Read.

ON the morning of September 4th, after having been at sea for fourteen days, we found ourselves approaching the broad harbor of Bahia. A long low point of land, at its extremity a tall lighthouse, jutted out into the sea on the northern side of the entrance. Over this we got a glimpse of the roofs and towers of the city. On the far-off southern side of the harbor were ranges of verdurous hills, which gleamed brightly in the sunrise. Rounding the point upon which the lighthouse stands, we made our way westward and cast anchor before the town. A couple of forts, one of which was originally built by the Dutch during their occupation of the country, guard the roadstead. The city stretches for a couple of miles along the curving shore of the bay, and is divided into upper and lower sections. The lower section occupies a narrow stretch along the water-front and is raised only a few feet above the level of the sea. Large docks are in process of construction. Behind these rise warehouses, banks,

and office-buildings, in which various commercial firms have their headquarters. Towering above the lower city along the whole front of the harbor is a steep escarpment several hundred feet in height. On the upper plateau, separated by this high bluff from the lower town, is the residential section. Here are the homes of the affluent, and also of many of the poor. Here is the cathedral, and here are many churches, numerous convents, a great theater, the mint, the palace of the Governor, the medical college, and beautifully arranged parks. Here, too, are located many of the better shops, where goods are sold at retail. Access to the upper city is gained by circuitous routes leading around the great wall of rock which faces the harbor, or through a couple of deep depressions which interrupt its face. These longer routes, which must be employed for vehicular traffic, have been supplemented by inclined planes and a great double elevator, or "lift," which runs both by day and by night.

We went ashore in small boats. A shower of rain swept over the bay as we left the ship, but was instantly succeeded by bright sunshine. The oarsmen hoisted a rude sail and we were not long in reaching the land. As we approached the dock we were impressed with the scenic charm of the place. The great cliffs overhanging the red roofs of the lower city were draped with the richest tropical verdure. The architecture of the houses recalls that of Lisbon and other cities of southern Europe. The buildings are tall and narrow, five, six, and even seven stories high, roofed with tiles. Across the water came the sound of church-bells, for it was a day of festival.

After landing, my first errand was at the bank, for as yet I had none of the money of the country in my pos-

session, and without money the path of the traveler may be hard, even if interesting. It is pleasant to read books describing the adventures of tramps abroad, but it is preferable when in a strange land to have enough change to enable one to buy a banana, if desired. Brazilian money is somewhat anomalous, though quite logical. The unit is the real, which is equivalent in value to about $\frac{1}{100}$ of a mill in the coinage of the United States. The principal coin of Brazil is the milreis (a thousand reis), a piece of silver worth in exchange thirty-one cents of the money minted in Philadelphia. Five hundred reis is equivalent to 15½ cents, 100 reis to 3½ cents of our coinage. I drew ten pounds sterling on my letter of credit and found myself the proud possessor of 158,790 reis. Here appeared to be a sudden and marvelous accession of wealth, but "riches soon take to themselves wings and fly away." There is another side to the story. The charge for sending a cable message to the loved ones at home, consisting of but three words, was 9000 reis; a ticket in the elevator which took me to the upper city was 100 reis; and the conductor of the tram-car charged me the same amount for carrying me about ten squares, when I got to the top; my lunch cost me 5000 reis, and it was very simple and not particularly good, consisting of fruit, a leathery omelet, rolls, and coffee. If I had grown suddenly rich, I began to grow as suddenly poor. In the United States it is said that people have in recent years come "to think in millions"; in Brazil they think in milreis. The sign for the milreis is the well-known mark of the dollar, $. It is at first blush startling to have a memorandum presented to you in your hotel after breakfast, stating that you owe for your eggs and coffee the sum of 3$000; and it is positively

alarming after a stay of five days to have a bill presented to you on leaving for 100$000. But it is not so bad as it looks.

While attending to my small affairs at the bank and in the telegraph office, I became separated from my friends who had come on shore with me. They told me that they were going to the upper city and would proceed slowly, so that I could overtake them. But they had vanished, and I was left alone "a stranger in a strange land." Solitude, however, is not necessarily misery. A man who is alone can often learn as much as one who is attended by companions. Making sure that I had lost my comrades, I boarded the street-car going east, and resigned myself to my fate. I did not know the amount of the fare, but selected the smallest piece of coin I had, 400 reis, and gave it to the conductor, and he gave me back 300 reis as change. How far the fare would have carried me I do not know, but we had only gone a short distance when I spied the entrance to a park. I beckoned to the conductor; he rang the bell; the car stopped. As I had been riding along the street my attention was attracted, as it had been before, to the fact that most of the people appeared to be of African descent. Bahia is in fact the capital of the "Black Belt" of Brazil. It is said that in the interior of the state of Bahia there are colonies of blacks who have reverted to the ways of "darkest Africa." The streets, filled with gaudily clad negresses carrying their burdens upon their heads, the tropical sunlight glowing upon the walls, the rich, luxuriant vegetation in the gardens, brought back to me memories of northern Africa. Bahia would furnish splendid studies for an artist who revels in color. From this point of view it seemed to me quite as attractive as

Tangier and similar places now greatly frequented by painters.

But I was at the entrance of the park adjoining the Governor's palace. It is located on the very edge of a steep bluff overlooking the city and the bay. The panorama is imposing. After wandering along the paved walk, protected on its outer edge by a balustrade of stone, and feasting my eyes upon the prospect, I turned to more nearly examine the various growths

Fig. 3.—Breadfruit (⅛ nat. size).

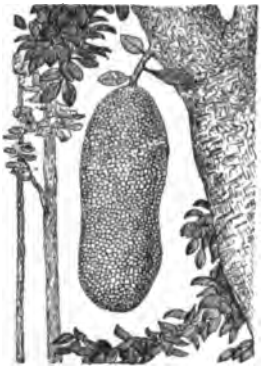

Fig. 4.—Jack fruit (⅛ nat. size).

about me and to observe what I could discover of tropical life. At the lower end of the walk stood a number of fine specimens of the royal palm (*Oreodoxa regia*); mimosas overhung the path with their delicate foliage, decked with blossoms looking like pompons of yellow silk. There were parterres of flowers and hedges of roses in full bloom. Here and there a yellow butterfly (*Catopsilia eubule*) fluttered about. I had, alas! forgotten to bring my butterfly-net with me, but consoled myself with the reflection that the species is common, and occurs, though rarely, even in Pennsylvania. Among the trees which shaded the entrance

to the park were a number of large specimens of the jack tree (*Artocarpus integrifolia*). The species has been introduced into the American tropics from the East Indies. It is closely related to the breadfruit (*Artocarpus incisa*), which was introduced from the South Sea Islands, and has become universally diffused in the West Indies and the northern parts of South America. The leaves of the breadfruit are very broad and palmately incised, the leaves of the jack are much smaller and entire. The fruit of *Artocarpus incisa* is about the size of the head of a child, while the fruit of *Artocarpus integrifolia*, which grows out of the side of the trunk or the larger branches, is a huge thing, as big as a large watermelon, weighing thirty or forty pounds. The flesh of the jack fruit is coarser and more woody than that of the breadfruit, and not so palatable, though I must confess after eating roasted breadfruit that I do not regard it as a very choice viand. I have eaten things I liked better. From the trunks of the jack trees in the park in Bahia were hanging several large specimens of the fruit, at which I gazed with interest. It was the first time I had ever seen the plant in life. In a fountain in the park were a couple of small alligators and a big turtle, which a little mulatto boy was teasing with a long stick.

As I was going out of the park a well-dressed gentleman came toward me, and I ventured to accost him in the French language and inquire whether I was correct in my surmise that the stately building at the entrance was the palace of the Governor. He responded courteously in the affirmative and volunteered the information that he himself was the private secretary of the Governor. We stood and chatted for a few moments. I told him that I wished to improve my few hours on

shore by seeing something of tropical nature. He advised me to take a certain street-car, the directions for reaching which he kindly gave me, and by that means to go to the Vermilion River, a favorite bathing-resort by the side of the sea. I thanked him, took his advice, and was well repaid for so doing.

Leaving the upper plateau covered with buildings, the electric tramway descends by a number of sharp turns into a narrow valley, where I found myself journeying along rapidly under a growth of fine tropical trees. After a while we emerged from the shadow of the woodland and came out to the beach. Here the vermilion-colored cliffs were bordered by a strip of clean white sand, through which protruded great rocks clothed with seaweed where the tide reaches them. The blue ocean was full of dancing waves, which came rolling ashore, throwing up great clouds of spray. A headland covered with stately palms jutted out to the right, its red cliffs circled below with a wreath of white spume. Hawks and vultures were lazily sailing in the air. A fisherman on a catamaran was plying his calling amidst the surf. At intervals of about ten minutes he would venture out, cast his throwing-net, and then ride in on the top of the rollers, bringing in his catch of fishes, which glittered in the sunlight as if they had been made of burnished silver. As he hauled his rude craft ashore, an old negro crone, only a little less naked than the man, and a couple of children went down and helped him to disentangle the fishes from the net. They had already filled several large baskets. The fishes seemed all to be of one species, allied to the herrings of our northern waters. But what interested me most was to find the beach behind the sandy reaches full of flowering plants, upon which

there were swarms of butterflies and other insects, many of them long known to me through specimens preserved in my cabinets, but which I here for the first time saw upon the wing. The hour I had at my command was all too short. I could have spent days here content to observe the ways of plants and insects, birds, beasts, and men.

I returned to the city as I had come, glad that I had at last seen a little of that tropical life in the midst of which I first saw the light of day, but which until that moment had been for me little more than a tradition handed down to me in my early boyhood by my father and my mother. Here everything recalled to me the tales told to me when I was a child of life lived in an Antillean Eden. I remembered that I had been told when a child that my nurse, bearing me in her strong arms, used to take me into the cane-field and pare for me a joint of cane that I might enjoy it. More than threescore years have passed since then, but I could not resist the temptation to purchase a stick of cane from a passing vender, and, paring it, I tried to conjure up a vision of my infancy when I was "little massa."

Alighting from the car which brought me back from Vermilion River I spied a party of my shipmates at luncheon in one of the hotels; they beckoned to me and I joined them. After luncheon we undertook a round of the churches. There are eighty-four of these, most of them in the upper city. The Church of San Antonio first claimed our attention. It is a large building the interior of which is elaborately ornamented by carvings in wood, which have been gilded. They are said to have been made by resident monks, who spent a vast amount of time in planning and carrying out the designs. The effect is gorgeous, but not otherwise

impressive. I succeeded in gaining admission to the private quarters occupied as offices, meeting-rooms, and library by the resident clergy. Here were some interesting old books, pictures, and historical relics which appealed to my fancy more than did the heavily ornate decorations of the nave and chapels. The minor ecclesiastic who showed me around and explained everything in Portuguese was very polite and obliging. I spent half an hour with him and regretted that I could not have stayed longer. The views from the windows of this part of the complex of buildings are very charming, and I sat down at one of them and for a few moments feasted my eyes with the sight of the city and the distant hills.

On returning from the little tour of exploration in the hidden parts of the church, I again found that I had lost my companions, and forthwith proceeded to visit one or two other churches, which were said to be worthy of inspection. But to one who is familiar with the ecclesiastical architecture of Europe, who has studied the cathedrals of England, Germany, France, and Spain, who has seen St. Peter's in Rome, and the gorgeous basilicas of Moscow and St. Petersburg, the impression left upon the mind by the churches of Bahia, some of which date back for a couple of centuries, is upon the whole quite disappointing. Their white-washed exteriors, standing forth with dazzling clearness against the deep blue sky of the tropics, are certainly more effective from an artistic standpoint than their interiors.

Forsaking the task of exploring churches, I betook myself to the shops, the market-places, the streets, and lanes. There was little here which was attractive, but much to interest. The goods displayed were

principally, if not entirely, of European or American manufacture. The great majority of the stores or shops consist of a single room with a high ceiling, opening out to the street, as do the shops in Spain and North Africa. At times I could almost imagine myself back again in Granada or Tangier. The merchants sit surrounded by their wares at their elbows; the artisans, the cobbler, the cabinet-maker, the bookbinder, the printer, work in full view of the passers-by, and exchange greetings and carry on conversations with the people who loiter past the open front of the little rooms which they occupy. Some of the lanes are almost as narrow as in an old Moorish town, and once I had to step aside as a street peddler came along with his donkey bearing a pair of panniers containing the wares which he was retailing. The incident suggested the Orient.

I noted the fact that there was nothing in the way of manufactured articles which might be regarded as characteristic of the country, and used as souvenirs of my visit. The absence of artistic instincts among the craftsmen struck me. It is so totally unlike what is seen under like conditions, in many similar places in Italy, France, and more particularly in Japan. It might be imagined that in a land which is rich in its products, and where the necessities of life are easily supplied, the consequent leisure would lead to activities along artistic lines, but the impulse is apparently lacking. Something more than idleness and picturesque surroundings is necessary to awaken artistic yearnings and activities. The decorative, imitative, and interpreting spirit must exist in the blood of a people. Environment alone will not produce them. Africa since the days of the Pharaohs has not shone resplen-

View of Bahia Looking down from the Balcony of the Elevator in the Upper City.

Interior of Church of San Antonio, Bahia.

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dently in the annals of art. Portugal has produced few painters and sculptors; you could count them on your fingers. The people of Bahia, representing in great part the blood of Angola, or other West African countries, or the commingling of African blood with that of Portuguese sailors and adventurers, is qualified for exertion along many useful lines, but the imitative arts have not up to the present time taken deep root. There may come a change in the future; but it will be by a process of instillation, rather than education, and the result in the event will probably not be epoch-making.

There are no arrangements in Bahia for warming the houses. None are needed. It is always summer in Bahia. The kitchen is the only place where fire is required, and the furniture for cooking in the homes of the common people is very primitive. Wood and charcoal are the fuel employed. I saw negroes carrying fagots of firewood tied in bundles and fixed as huge loads upon their backs, just as they do in Morocco, or as I have seen poor peasants in the south of France performing the same service.

As there is little need of fire, so there is little need of clothing, except for purposes of ornament. In the case of the juvenile population among the poorer classes the necessity for other apparel than that provided by kindly Nature is apparently not recognized. I passed a number of houses, where the younger children were playing *in puris naturalibus*. Thus arrayed they even appeared upon the streets, and I saw one fond mother leading along the sidewalk two little figures in bronze, which might have served as models for Cupids.

The discovery of Brazil was made by Pedro Alvarez

Cabral on March 9, 1500, although Pinzon in January of the same year had sighted land in the neighborhood of Cape St. Roque. Cabral made his landfall at a point which is now included in the southern part of the Province of Bahia. He thought the land to be an island and called it the Island of the True Cross, a name which did not stick. Cabral's discovery was quickly followed by the sending of fleets to possess the country, but, as no gold was found, there ensued disappointment. The only thing of apparent value which was discovered was dye-wood, known then and now as "brazil-wood," and this wood gave its name to the country. Vessels were sent out to get brazil-wood and the "Brazil-coast" soon became known. The first European settler was Diego Alvarez, who was a deserter from one of the ships which had gone out to get dye-wood. He established himself in 1509 at Bahia, and saved himself from being eaten by the cannibal Indians by the use of his musket. The Indians nicknamed him "Caramuru" or "the lightning man." Eventually he married the daughter of a chief and had a brood of mestizos by her. Forty years afterwards the first real colonists of Bahia appeared and the half-breed descendants of Alvarez were of great service to them in dealing with the Indians.

Founded in 1549, until 1763 Bahia was the capital of Brazil. Not long ago it was regarded as the second city of the country in commercial importance; but during the past three decades it has been outstripped by São Paulo. The population of Bahia has more than doubled since 1890 and is said to exceed two hundred thousand; but that of São Paulo in the same time has quintupled and is now over four hundred thousand. The growth of these South American cities in recent

years has been quite as rapid as that of the cities of the United States.

Bahia during the more than three hundred and fifty years of its existence has witnessed many stirring scenes. On May 9, 1624, Piet Heyn, "the Dutch Sir Francis Drake," took Bahia from the Spaniards, who, having annexed Portugal, claimed and held the place at that time. The capture of Bahia was a daring exploit, and was accomplished by Heyn in a hand-to-hand conflict against apparently overwhelming odds. The following year a combined fleet of Spanish and Portuguese ships, fifty-two in number, armed with eleven hundred and eighty-five guns and carrying twelve thousand five hundred men, was sent to recapture the place, and succeeded. The fleet was the most formidable sent out by Spain since the days of the Grand Armada. The valiant Dutch commander of the garrison, Jan van Dorth, had been killed in a skirmish before the arrival of the Spaniards. His successors were incapable, and though a strong Dutch fleet was on the way to reinforce Bahia, they came too late, for the garrison had already surrendered. Then in 1627 Piet Heyn came back. He had a vastly inferior force, but he was a man who did not know fear. He sailed into the harbor in the teeth of the forts. He ran his ship between the two biggest Portuguese men-of-war, and when the gunners on shore slacked their fire for fear of hurting their own countrymen, the intrepid Dutchman proceeded then and there to sink the flagship of the Admiral, and captured the rest of the fleet of twenty-seven sail lying under the guns of the place. For a while he roamed up and down the coast destroying or capturing every craft which flew the Spanish or Portuguese flag, and then returned to Holland with so much booty in

the form of thousands of hogsheads of sugar and shiploads of hides that the coffers of the Dutch West India Company were enriched, and the Directors were able to send him out on an expedition to the Caribbean. In the fall of the year 1628 he captured in the Bay of Matanzas the great treasure-fleet of Spain carrying cargoes appraised at nearly fifteen millions of florins, and dealt a deadly blow to the sea-power of that country, which so long had been trying to strangle the liberties of the Dutch.

From 1623 until 1647 the Dutch were more or less securely intrenched at various points along the Brazilian coast from Cape St. Roque to Bahia, and at one time it seemed that they would be left the masters of the situation; but political changes in Europe, mistakes in the administration of the Dutch West India Company, and the revival of the power of Portugal, led to their final overthrow. There are still many people who to-day express regret that the Dutch did not permanently occupy the country, and a prominent citizen of Bahia, with whom I conversed, said to me that in his judgment it would have been a great blessing for the land had the States General of Holland been by a kindly Providence assigned the task of developing the region and its institutions. It was, however, ordained otherwise.

View of Rio de Janeiro from the Harbor. Corcovado on the Left, Tijuca on the Right in the Distance.

(From a water-color sketch by the author.)

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CHAPTER VI

RIO DE JANEIRO

Hail! City of the tropic seas,
  Queen of the headlands, veiled in light,
Pillowed among thy purpling peaks,
  Sun-decked, and robed in white!
Thy feet are laved by Ocean old.
  Thy head is crowned with bloom,
And Flora from her cups of gold
  Pours o'er thee rich perfume.

ON the morning of September the 7th we came in sight of the mountains which guard the coast just north of Rio de Janeiro. They are bold in outline and their precipitous walls of rock in places rise up grandly from the ocean. At the openings of valleys were narrow strips of level land covered with forests. Occasionally a clearing and human habitations could be seen, and here and there were white beaches against which the surf lazily rolled. Fishermen in small boats were plying their business on the smooth waters. A monastery on a little rocky islet not far from the shore attracted attention. The forests of palms crowding to the edge of the water reminded us that we were still in the heart of the tropics. At last we turned in nearer to the coast. A crag, so steep that it looked as if a goat would have difficulty in obtaining a foothold upon its lower slopes, rose above us. Beyond

it was a small island topped with palms. Still farther south, above the blue horizon, serried peaks guarded the dim distance. The bow of the great ship swung closer in shore, and was pointed toward the spot where the palm-clad island and the tall crag seemed to meet. It almost looked as if we were going to run ashore, but the big man with the kindly face up on the bridge knows the coast. He has brought ships in and out of these rocky inlets for forty years, and understands his business. The ship does not slacken her speed, but rounding the foot of the crag, passes through a narrow entrance, coming so close to the island that the waves which she throws up chase after each other and dash in long lines against the rocks. We are so near that we can do a little botanizing and with the naked eye can make out the species of the trees before us. Suddenly a noble panorama is disclosed. Tall hills on the right are topped in the distance by taller mountains. Dead ahead is Sugar Loaf, a huge cone of granite, rising, a great monolith, from the quiet water. Back of it in the blue distance are Corcovado and Tijuca, their slender peaks pointing into the sky, "the fingers of God," as the natives call them. A rock which looks like the hull of a ship which has "turned turtle" lies on the port bow. Ahead of us is a city, its towers and palaces showing white in the sunlight against the dark green of the mountains behind it. Scores of steamers are lying at anchor, among them, clad in mail, two huge dreadnoughts. We are in the harbor of Rio de Janeiro, the most beautiful harbor in all the world.

As we came up through the narrow entrance a puff of white smoke rolled from the embrasure of a fort at the right, and was followed by a hollow boom, which reëchoed from the cliffs. The discharge was repeated

again and again. And then we saw that over the low rock ahead a flag was flying, and we made out openings in its sides, and presently from these the fire spat and the smoke poured. Other forts, here, there, everywhere began to thunder. It was exactly noon. What did this cannonading mean? Oh! it was only the sign of popular rejoicing. The 7th of September is the national holiday of Brazil and corresponds to the 4th of July in the United States. It was Independence Day. We were running the forts at the entrance without being "stormed at by shot and shell." The smoke of the cannonade drifted out over the channel and became so thick that it partly hid from view the city and the shipping in the distance. We had chosen a fine day on which to make our landing. Rio de Janeiro was *en fête*, and as we emerged from the veil of the powder-smoke we saw that the men-of-war were gaily dressed with flags; we saw that every ship at anchor was flying the colors of Brazil; we heard the sound of martial music coming from the shore; bands were playing; rockets were banging; and firecrackers were snapping everywhere. These Brazilians celebrate their "Seventh" with as much noise as we celebrate our "Fourth." And now the screw has stopped; we begin to move slowly and more slowly still. As we hang over the rail we can at last scarcely detect any motion. "Let go!" comes the command. A hoarse roar of chains at the bow! a splash! we are at anchor! Before us lies the capital of Brazil.

Owing to the fact that the stevedores at Santos were on a strike our captain had received instructions to discharge the cargo intended for Santos at Rio. We were accordingly informed that we would make a stay of from four to five days, and I therefore determined to

leave the ship and go ashore. A strong argument for this course was the fact that I had discovered at Bahia that immediately over my cabin there was a steam-winch, which would be in operation both by day and by night. Proximity to this noisy monster would make sleep on board impossible. When selecting cabins for a coasting cruise, let me recommend fellow-travelers to look out well for the location of the winches. A winch overhead is worse than nightmare.

We had scarcely come to anchor when we were surrounded on all sides by small rowboats and lighters. One of them brought a man who ran up the ladder, and called out my name. It was startling. Fancy at once conjured up visions. Could he have some dread message to convey to me which had come from far off, under the seas? I was speedily relieved and reminded that two days before I had sent from the ship a Marconigram asking that a room be reserved for me at one of the hotels. The man who sought me was the messenger of the house, who came to inform me that the only vacant room was at my disposal, and to help me on shore with my luggage. I was glad that I had sent my message. There are numerous excellent hotels in the city of Rio de Janeiro, located on the main avenues, but, as a naturalist, I wished to be a little nearer Nature's heart than I could be in these, and therefore, on the advice of friends, had selected a hotel which was in the outskirts of the city, half-way up the flank of Corcovado and embowered among the rich forests of its slopes. It was for me a happy choice, and a happy chance that my message had found its way through the air when it did.

Leaving the care of my luggage to the courier of the hotel, I joined a large company of my fellow-passengers

in boarding a steam-launch, which quickly put us ashore. A tram-car conveyed us to the terminal station of the electric railway, which ascends the slopes of the mountain and by which my destination could be most speedily reached. The cars are open, permitting the passengers to see everything. After a little delay we were off. The road rises rapidly. In half a minute we were flying along on a level with the roof of the great opera-house and many of the most imposing edifices of the lower city. Then we sped over the arches of the old aqueduct built by the Jesuit Fathers more than one hundred years ago. Under us were busy streets and flat-roofed houses which fill a narrow but densely populated valley. The tops of four or five lordly palms rise to the level of the tracks, and we were almost near enough to touch their feathery fronds waving in the sunlight. Having crossed the aqueduct, the road ascends the hillside and winds upward, past beautiful villas embowered in gardens, rich in flowers. The poinsettia flaunts its crimson bracts over the walls; bougainvilleas in sheeted masses of purple blossoms, more splendid than the robes of an emperor, cover arched gateways; a score of species of palms, conspicuous among them the royal palm, raise their stately columns, fifty, seventy, and one hundred feet into the warm air; the perfume of blooming orange-groves invades the senses. The road winds to the right and to the left, at each turn disclosing a new outlook over the harbor, the tree-clad hills, the mountains encircling the horizon. Every view is a picture of transcendent loveliness. Higher and higher we rise. At last we plunge under the shadow of great trees loaded with orchids and freighted with pendant lianes. We are in the midst of the tropical forest. We look down into

deep ravines where the sunlight glimmers on the tops of tree-ferns and feathery bamboos, where the monarchs of the forest have clothed themselves in bloom, white, purple, yellow; where birds of gorgeous plumage flash from branch to branch; where great blue morphos, the jewels of the world of butterflies, gleam like huge sapphires as they lazily float upward and downward and are then lost to view in the deep umbrageous recesses. A glimpse at this world of wonders and the car stops at the entrance to the elevator, which quickly raises us to the outer courtyard of the hotel, which is to be our home for four memorable days. We find ourselves in an abode of comfort, with the forest all about us, but through the setting of its walls of green disclosing magnificent views of the distant city, the bay, and the mountains. Here I rejoice at the thought of "taking mine ease in my inn," and here I am happy to find a place from which to sally forth into the tropical "Urwald."

It only took me a minute or two to deposit my impedimenta in my room, to fling open the shutters, and to see that the windows commanded a most noble view, and then to unpack my insect-nets and other paraphernalia of the entomological chase. It was near the middle of the afternoon and rather late for an entomological foray, but the temptation could not be resisted. My path led me upward through the grounds of the hotel, amid gardens and orange-groves; upward through copses and thickets; upward by a path at the end of which I found that an observation-tower had been kindly built; and climbing its stairway I seated myself, tired of the stiff climb and ready in the warm light of the declining day to yield myself to the enchanting influences of my surroundings. Overhead soared a

The Opera-House, Rio de Janeiro.

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score of vultures; near by in the trees several species of cicadas were singing their vespers; that gaudy, noisy, and popular South American songster, the Bienteveo (*Pitangus bolivianus*) was calling from tree to tree; a dozen birds, all of them strangers to me in life, were flitting about and making the gardens vocal with song. Far away was the blue horizon of the ocean; the shining roadstead of the harbor gleamed brightly under the westering sun; all around the strange huge bulks of the mighty cliffs and escarpments, recalling the bold faces of the mountains which encircle the Valley of the Yosemite, loomed skyward. The distant booming of cannon, the faint jangling of bells, the noises of rejoicing in the city came softly to the ear. It was delightful to sit in the waning light of a lovely sunset, amidst the languorous tropical air, and in solitude drink in deeply the impressions of the hour.

I was roused from my reveries by a droning beetle, which wavered a moment in its flight, and fell a victim to my net. I realized that out of the herbage around me were issuing the swarms of insects which emerge at dusk. The electric lights about the hotel were already beginning to twinkle. I made my way downward by the path I had come, and found myself presently under the electric lamps busily engaged in sweeping into my net beautiful creatures, large and small, some of which I knew at a glance as old friends and others I recognized as forms which were strange to me. At the dinner table the attention of the throng of fashionably dressed ladies and gentlemen was attracted to a large moth, brilliantly colored, which came fluttering about the tables. I slipped into the hall and seized my net, and as the gay insect came by, with a quick stroke captured it; I was greeted with a salvo of applause from the

assembled guests, and immediately found them all to be most kindly interested in my entomological pursuits. One lady came to me and informed me that if I would go to one of the upper corridors I would find a large moth resting in a corner where she had observed it before coming down to dinner. Two little misses tripped up to me and told me that I must go to the big electric lamp at the corner of the hotel, where I would find a half-dozen moths resting on the wall. The manager and the waiters came to my assistance and informed me of discoveries which they had made, and from nine until eleven o'clock I worked industriously, accumulating a large number of specimens of beautiful tropical lepidoptera, which it took me until midnight to put into papers for safe-keeping. It certainly was for a veteran entomologist an evening of unalloyed pleasure. And like it were all the evenings of my brief stay in this interesting spot.

On the morning of the next day when I awoke after a refreshing sleep I lay for a few moments gazing out of the tall windows, which reached from the floor to the ceiling. In the far distance I heard the tooting of locomotives and the deep growl of a big steamer signaling her departure; near at hand I heard the twittering of sparrows about the eaves, the sharp eager notes of swallows circling through the air, the call of the Bienteveo, and the warbling of a thrush. Light fleecy clouds were hovering about the wooded peaks. I sprang up and looked down with delight upon the world robed in green. It was Amerigo Vespucci who said that "if Paradise exists on this planet it must be near the Brazilian coasts." Of all that coast the most beautiful portion lies around the great estuary on which Rio de Janeiro stands.

I had set apart this day for a visit to the city. I resolved that I would begin by calling upon Dr. Orville A. Derby, the Director of the Geological Survey of the country. Dr. Derby holds an enviable position among the citizens of the Brazilian metropolis, where he has resided for forty years. He was one of the trusted scientific advisers of the late Emperor, Dom Pedro II., and has been active both under the empire and the republic in developing the resources of the land, which he has made his home. His unfailing kindness to men of science who visit Brazil, and his great learning have won for him a host of admiring friends, and I felt that it was a privilege as well as a duty to call upon him to express in person my cordial appreciation of the services he had rendered to Mr. John D. Haseman, whom the Carnegie Institute sent to Brazil in 1908, and who for nearly three years had served us there as a field naturalist, making many interesting discoveries.

I found Dr. Derby at the hotel where he resides, and at leisure for the day. We lunched together, and my host exerted himself to select from the voluminous bill of fare viands characteristic of the country. Among other things we had some delicious shrimps fresh from the sea, quite equal in flavor to the best New England lobsters. We had boiled cabbage-palm and fried plantains, dishes not known outside of the tropics. The Brazilian cheese was very good, and I was informed that dairy products are beginning to be exported in considerable quantities from Rio de Janeiro. The coffee was veritable nectar. Three-fourths of the coffee consumed by mankind comes from Brazil, and the art of brewing a good cup of coffee is certainly understood in Rio.

After luncheon we repaired to the Geological Museum,

where my learned companion showed me the collections representing the minerals and fossils of the various formations which he has been assembling for many years. He conducted me through the laboratories; and I was deeply interested in a number of fine relief maps which he has prepared or has in process of preparation. An unfinished relief of very large size, showing the whole of Brazil, adjusted to the curvature of a globe of immense size, particularly attracted me. I was also very glad to see a relief map of Rio de Janeiro and its environs and to receive from Dr. Derby a most interesting and instructive account of the geology of the district. We talked about the mines, of precious stones and metals, and of the coal-fields of Brazil. The question of a fuel supply is one of great importance in all of the South American countries. The coal at present used is imported from overseas. The deposits of coal in Brazil thus far discovered are not extensive in area and are of inferior quality, though by proper treatment it is believed that these Brazilian coals may be utilized to advantage. However, the development of railways is likely to be much retarded by the lack of cheap fuel. To sacrifice the great forests of valuable woods to the devouring maws of steam-engines would be a frightful act of vandalism. Fortunately, in the vicinity of Rio de Janeiro and other cities in Brazil there are fine waterfalls, and these are being harnessed and used in the service of the electric railways. On the broad plains of the south and the interior such sources of power are of course lacking. There are reported to be extensive beds of coal in Bolivia, but as yet they are wholly inaccessible, though the problem of reaching them is attracting attention.

After leaving the Museum of Geology we repaired to

The Avenue of Royal Palms in the Botanical Garden, Rio de Janeiro.

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the Botanical Garden. Calling at the house of the Director we learned to our regret that he was not at home, and proceeded in a leisurely manner to walk through the park, in which is gathered one of the most superb collections of tropical vegetation which exists. The chief glory of this wonderful garden is found in the avenues of royal palms, some of which have survived the vicissitudes of a century and still are apparently filled with pristine vigor, sending their columns aloft into the air, great rounded shafts of supple wood, crowned with huge coronets of exquisite foliage. We lingered in the garden until it was nearly dusk, and then repaired in company to my hotel upon the mountain side, and until nearly midnight sat and talked of mutual friends who are leaders in scientific research, and of the great future that lies before Brazil, destined within the next two hundred years to be the home of one of the greatest nations upon the globe. We parted with the promise that on the evening of the morrow we would go together and visit the house of a friend who has the largest collection of butterflies in tropical America.

CHAPTER VII

RAMBLES ABOUT RIO DE JANEIRO

"Father, thy hand
Hath reared these venerable columns. Thou
Didst weave this verdant roof. Thou didst look down
Upon the naked earth, and forthwith rose
All these fair ranks of trees."

W. C. Bryant.

THE days of my stay in Rio de Janeiro, which succeeded that first day, passed so pleasantly in the company of Dr. Derby, were devoted in part to sight-seeing in the town, and in part to long rambles among the tropical woodlands and mountains.

Accompanied by friends I visited the Annual Exposition in the Academy of Fine Arts. There were a few good pictures by Brazilian artists, but most of the canvases were not such as to attract prolonged attention. Art is still in its infancy in Brazil; nevertheless several of the pictures showed a fine sense of color and vigorous handling. There is some talent in the land which is worthy of being encouraged.

The impression made upon the traveler by the life of the streets in Rio de Janeiro, in fact in all South American cities, is such as to recall the lands of the Mediterranean, rather than those of northern Europe, or the United States of North America. The manners and customs are those of southern Europe. The street-merchants and market-women, the porters and

The Monroe Palace, Rio de Janeiro.

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cabmen, the crowds on the side-walks reveal by a hundred little traits in action and address that they belong to the Latin rather than the Teutonic races. Who in England or the United States has seen men carrying their stock of vegetables about from house to house in baskets slung at the ends of a yoke-pole? But in Italy and Spain and North Africa such sights are common, and everywhere in Rio de Janeiro we encountered them.

Many of the public buildings of Rio de Janeiro are excellent in design and appearance. The influence of French taste is conspicuous in many of them. The Opera House, modeled after that of Paris, is as fine a building as its prototype. The Monroe Palace is recognized at once as the Brazilian Building which graced the Exposition at St. Louis, and which, transported to Rio, now adorns the Avenida. There are numerous streets which compare favorably with similar streets in any of the great European capitals. The most attractive feature of Rio is the system of boulevards intersecting the lower portion and bordering the waterfront. Nowhere in the world is there a more beautiful drive than that afforded by the Avenida Beira-Mar. The road-bed is perfection, and the exquisitely beautiful views of the bay and the mountains, which it offers at every turn, cause all other great municipal thoroughfares to suffer by comparison. The Riverside Drive in New York, the Thames Embankment in London, the Avenue des Champs Elysées in Paris lack altogether the elements which combine to make the great Brazilian avenue the magnificent promenade which it is. The Hudson is a noble stream, and the Palisades are striking; but to produce in New York the effect of the view at Rio it would be necessary to

bring down the White Mountains from New Hampshire and set them up in the New Jersey marshes, put the cliffs and mountains of the Yosemite into the regions of the Bronx, and build a section of the maritime Alps of Italy from the Atlantic Highlands to Newark. After all this had been done there would still be lacking the sun and riant vegetation of the tropics.

At various points there are small parks exquisitely kept, and numerous monuments commemorating historic events and personages. Mons. Georges Clemenceau in his recent book entitled *South America of To-day* criticizes in a good-natured manner the tendency which is so apparent in South America to embellish open places with monuments and groups of statuary commemorating men of less than world-wide fame. For my part I rather like the evident loyalty of the people of these countries to the memory of those who have been their leaders and benefactors. Granting that their names are little known in Europe or the United States, they were the men who laid the foundations of the institutions and the laws which to-day bless the nations whom they served, and it is fitting that those who come after them should remember them. There is quite too much haste in these times to bury our dead in forgetfulness. Republics are proverbially ungrateful, and I esteem it a hopeful and pleasant sign that here in these southern lands the duty of the present to remember the benefactors of the past is being felt.

But "God made the country, man made the town." I prefer the country. The result was that I devoted less of my time to rambling about the streets and market-places of Rio, and more to the woodlands and mountain-tops. Two afternoons were given to pedestrian excursions along the route of an abandoned railway

leading through the forest beyond the hotel. The track goes around the jutting shoulders of the hills, and rich tropical forests overhang it. Great tree-trunks veiled by creeping aroids, covered with parasitic growths, rise on all sides. Orchids were abundant. For part of the way the track runs alongside a section of the old Jesuit aqueduct built of massive masonry, which still in part provides a supply of water to the city. The masonry was covered with a thick coat of green mosses, and in the chinks grew delicate ferns. In the narrow ravines, through which the streamlets came bounding from the hills, tree-ferns were abundant. The great variety of families and genera represented in these hillside growths was one of the things which attracted immediate attention. In our northern woodlands there generally appear to be certain dominant forms in a given locality; in one place the hills are covered by oaks and chestnuts; in another by pines and birches; in still another by beeches and poplars. It was not so on the mountains about Rio de Janeiro. There were indeed certain species, individuals of which were more numerous than others, but there was everywhere a bewildering variety of species. The larger trees within a radius of a quarter of a mile belonged to at least twenty families and forty genera, and I have no doubt, taking into account the woody shrubs, these numbers would be doubled. Brazil is the metropolis of the *Melastomaceæ*, and if any family appeared more prominent than another it was these. There were many species of palms. It was just the period of the springtime, if there can be said to be a vernal period in a land where "everlasting spring abides," and many of the larger trees were in bloom. It was an impressive sight to stand on a jutting eminence and look down over

a densely wooded slope reaching like a robe of emerald into the valley, and here and there to see lordly trees veiled to their outermost branches with blossoms, white, yellow, purple, scarlet, or blue, giant bouquets set here and there in the midst of perennial green. The comparative absence of lowly composite flowers, which are so common in northern latitudes, was noticeable. They were not altogether wanting, but their place seemed to be largely usurped by verbenas, begonias, caladiums, and cannas. Convolvulaceous and leguminous plants, large and small, were abundant. A species of xanthoxylon with great yellow spikes of bloom grew abundantly in spots. The brambles of our northern woods were replaced by lantanas. Among the herbage I noticed some species evidently escaped from cultivation, for instance, here and there a stray coffee-plant in full blossom. This child of the Abyssinian highlands has found a congenial home in the American tropics.

But even far more interesting to me on some accounts than the magnificent vegetation was the wealth of insect life. Here I had an opportunity to observe close at hand those most magnificent of all South American butterflies, the morphos, numbers of which I found flitting by the pathway. Nothing in all nature exceeds the brilliancy of these huge blue insects, as they flutter into the sunlight, suddenly disappearing as they pitch upon the ground or a twig, closing their wings the under sides of which, through adaptation to their environment, cause them to be instantly invisible, except to one who is keenly watching them. I came upon them seated upon the ground, and was unaware of their presence until suddenly, like a gleam of burnished metal, their wings flashed open and they flew

Vegetable Dealer, Rio de Janeiro.

Poultry Vender, Rio de Janeiro.

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away. Here, too, I had the great pleasure of observing the curious habits of the butterflies belonging to the genus *Ageronia*, which invariably light head downward upon the trunks of the trees, with their wings expanded; and here I heard them as they circled about emitting that curious sound concerning which Bates, in his *A Naturalist on the Amazon*, has written. Just how these frail little creatures produce a loud clicking noise as they dash about in the air is an unsolved mystery. Here also for the first time I encountered in life the curious butterflies belonging to the genus *Ithomia* and allied forms. They seemed to be the ghosts of living things, so thoroughly transparent are their wings, and it was only by sharply noting the few bright spots upon them that I was able to follow them in their flight. Their pursuit seemed to be the chase of the invisible. Besides the butterflies, which were numerous when the sun was bright, there were many species of gaily colored moths, which are diurnal in their flight, and which hovered over flowers or flitted up from among the herbage. Some of these moths have a wonderful resemblance both in the form of their bodies and their wings to the bees and wasps, among which they feed upon the same food-plants. One of the marvels of the insect world is the great moth which is occasionally found about Rio de Janeiro, and which is characterized by its remarkably prolonged hind-wings, as well as by the beauty of its colors. It is known by the scientific name of *Eudæmonia semiramis*.

Of the Hymenoptera there were many species. A great black wasp (*Pepsis*) three inches in length was quite common and very conspicuous when feeding on the spikes of the blooming xanthoxylon. I captured a

couple of fine specimens. A large bumble-bee with black wings and reddish body was at work everywhere. Ants of various kinds appeared to be numerous. Dragon-flies were abundant, but proved difficult to capture.

The beetles of Brazil, especially those the larvæ of which feed upon wood and leaves, constitute a mighty

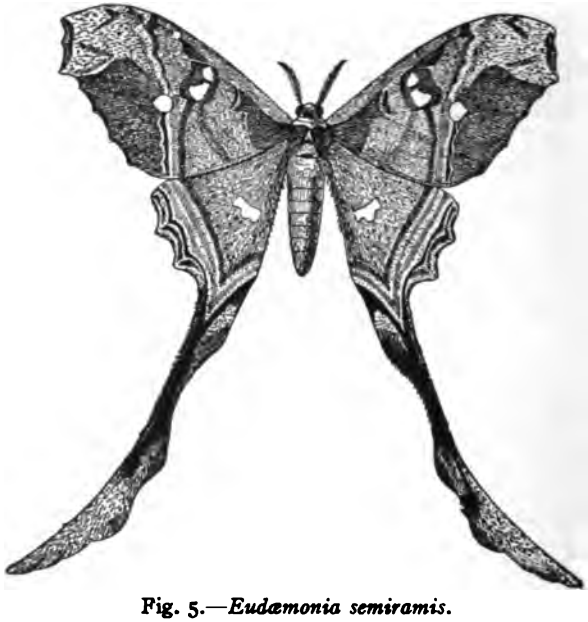

Fig. 5.—*Eudæmonia semiramis.*
½ natural size.

host. It is probable that only a small part of them have as yet been named and described. We know comparatively little of their habits and life-history. The *Cerambycidæ*, or Long-horn Beetles of Brazil, include many thousands of species as yet unnamed. There is in my custody a collection of these interesting insects in which I am told by one of my assistants that there are certainly twelve thousand species, the greater

part of which he has been unable thus far to identify. They all came from Brazil. To name and describe them is in itself a life-work, which awaits at this moment the proper man. Among the *Cerambycidæ* of Brazil are many most singular forms. Perhaps the most remarkable insect of the group is the great beetle which bears the scientific name of *Macropus longimanus*. Its back is marked with curious hieroglyphic devices. The *Dynastidæ*, another family of showy beetles, is also well developed in Brazil. The most striking of all is the Hercules Beetle, which ranges from the Island of Guadaloupe to Uruguay.

Fig. 6.—*Macropus longimanus*. ½ natural size.

Birds appeared to be numerous, and to my great delight I heard the call of the Bell-bird, though I did not see the beautiful creature. I do not think it possible that I was mistaken in this. Some years ago in the Zoölogical Garden in London there was a captive specimen of the bird, which constantly emitted its strange metallic note, and I studied and listened to it for half an hour. The same sound rang out again and again from one of the lonely dells on the face of Corcovado. I attempted to locate the bird, but it appeared to be hidden in the deep foliage.

The afternoon of an almost cloudless day was given to the ascent of Corcovado. This is made easy by the

railway, which has been built almost to the summit. It is operated in the same manner as many of the railways which have been built in Switzerland to enable tourists to gain peaks, which a few years ago were only to be reached by vigorous effort. Under the skies of Brazil the most devoted worshiper of the alpenstock is justified in substituting for the toil of his muscles a small contribution of cash from his pocket and forgetting the glory he won in his youth by many a reckless ascent. The railway climbs up by way of a gorge in the steep mountain-side, through which a brook comes foaming downward. Great trees overhang the track and through their tops are caught glimpses of the landscapes below. The last one hundred or more feet of the ascent are made by flights of steps cut in the solid rock, up which the tourist must go as a pedestrian. On the summit have been built a small pavilion, and just below it on the narrow edge of the mountain a platform about five feet wide, protected on both sides by balustrades. Walking to the end of this platform the observer looks out and down upon the world below him, as a man looks down from the basket of a balloon. Were he to leap over the balustrade he would drop nearly a thousand feet. The view is magnificent. On the east lies the Atlantic Ocean, a mass of sapphire, over which white fleecy cloudlets wander landward; to the north and the west is the bay, sprinkled with green islands, a sheet of lapis lazuli inlaid with emeralds; in the further distance to the north and west are the Organ Mountains, some of which lift their heads seven thousand feet above the sea; to the south are Tijuca and a hundred green hills; immediately below lies the city, spread out as upon a map, every avenue, every building in full view. Along the white roadways the

A Glimpse of Rio de Janeiro from the Harbor with the Peak of Corcovado Showing its Abrupt Eastern Face.

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street-cars move to and fro looking like ants, and human beings are mere specks of black, scarcely distinguishable except with an opera-glass. We staid a half-hour upon the summit feasting our eyes, and then the writer walked down the mountain botanizing and entomologizing as he went. The walk was hot, but it is never to be forgotten. What pleasure to be alone in the woods, with no sounds but those of the wind, the brooks, and the birds! What exquisite delight to ramble free of foot along pathways lined with plants, known hitherto only by carefully nourished specimens grown in conservatories, or preserved in herbaria. If a visit to the palm-house at Kew is a delight, what a delight it is to have the whole wide world apparently transformed into a colossal conservatory, and to be free to go up and down in it, gathering flowers everywhere.

The five days at Rio de Janeiro came all too quickly to an end. I promised myself as the anchor came up and we stood out to sea that, if life and health should be spared to me, I would again some day renew my acquaintance with this fascinating region, of the charms of which I had only had a taste.

As we made our way out of the bay I recalled what I had read of the history of the spot. Here the Huguenots of France once assayed settlement, and the memory of their occupation is perpetuated in the name of the fortified island which still bears the name of Villegagnon, the commander of the company of French Protestants who made the first attempt to colonize the region in 1555. They were driven out a few years later by Mem da Sa, the Portuguese Governor of Brazil, who laid out and effected the settlement of what is now the business quarter of Rio, and remained as Governor until his death in 1572. It is as idle to speculate as to what

might have been the issue of a French occupation of Rio de Janeiro as it is to imagine what might have been the result of a permanent occupation of the coast to the north by the Dutch. Rio de Janeiro during the period of the Napoleonic wars became the refuge of the Portuguese King and court. King John VI. of Portugal fled before the advance of Marshal Junot and his army and on November 27, 1807, accompanied by fifteen thousand people, carrying with them fifty millions of dollars in treasure, sailed away for Brazil, arriving at Rio on March 7, 1808. From that day to this Brazil has been the principal home of the Portuguese race. Brazil is greater Portugal, in the same way that North America is greater England.

Between the little town upon which Mem da Sa closed his eyes and the great city of to-day with its million of inhabitants there lie nearly three centuries and a half of human history. What changes have taken place in the world during these three hundred and fifty years! London, to-day the largest city on the globe, had in 1560 less than one-fifth the population of the Rio de Janeiro of the present. New York did not exist, and it was not until fifty years after the city of Rio de Janeiro was laid out that Hendrik Hudson in his *Half Moon* entered the river which bears his name. But in reality everything which makes life worth living to-day seems to have taken place since the discovery of the New World.

Fig. 7.—*Dynastes hercules*.
½ natural size.

CHAPTER VIII

SANTOS

"Town, tower,
Shore, deep,
Where lower
Clouds steep;
Waves gray
Where play
Winds gay—
All asleep."—*Victor Hugo.*

WE left Rio about noon on September 12th, and made our next call at Santos. The approach to the city is by a narrow tidal river which threads its way inland amidst mangrove-swamps, beyond which on all sides rise high mountains. We took on a pilot as we crossed the bar. He was a tall African from the Cape Verde Islands. His ebony complexion was matched by a rather natty uniform. I ventured later to express to the captain my wonder at his being compelled to entrust his responsibilities to the gentleman. He laughingly responded, "You should see how I do that. I give the orders, and he stands by and approves and confirms them. No, sir; I do not resign my responsibilities to black boys on this coast. I know the coast better than they do. I have been on this run for a lifetime."

Santos used to be regarded as the most unhealthy port in the American tropics. On the banks of the

tortuous stream, as we slowly made our way to the docks, we saw the ribs of a number of American ships rotting in the sluggish ooze, and I was told by the captain that these were ships which had been abandoned, crew after crew having died on them from yellow fever, and that they had been finally towed to the shore and deliberately burned, because they were veritable plague-ships and could not be taken away. Now all is changed at Santos. The building of the new docks, the consequent filling up of the low, marshy land on the river-front, and the adoption of proper sanitary precautions have led to the almost total extermination of the mosquito, which bred the yellow fever. Property values in Santos have risen within recent years in a manner truly marvelous. The town is the port of São Paulo, the capital of the state of the same name, which is built on the uplands twenty-five hundred feet above sea-level at a remove of two hours by rail from Santos. The latter city has about seventy thousand inhabitants; São Paulo about four hundred and fifty thousand, more than half of whom are Italians.

The river-front of Santos for more than a mile is faced by docks and warehouses of modern construction, and these are being rapidly extended. The town is compactly built. There is an extensive system of street-railways, the service upon which is excellent. By means of these access may be had not only to every quarter of the city but also to the suburbs. Of these the most attractive is Guaruja, where there is a noble beach of pure white sand, much resorted to by sea-bathers, and a number of fine hotels. São Vicente, located about six miles from Santos, is the site of the first permanent colony established by the Portuguese in Brazil. Here in January, 1532, Martim Affonso da

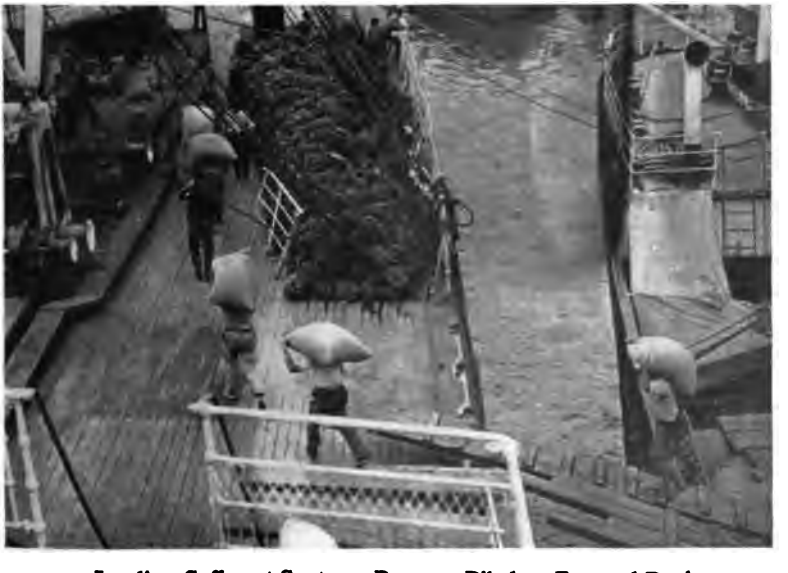
Souza founded a little settlement, from which the way was speedily discovered to the more healthful and equally fertile highlands separated from the coastal plains by the lofty escarpments which rise to a height of from twenty-five hundred to three thousand feet along the ocean. Da Souza was not, however, the first Portuguese to establish himself in this place. In the year 1511 João Ramalho, a Portuguese deserter, had settled here, as had Diego Alvarez at Bahia two years before. He too, like Alvarez, took to himself an Indian wife, and when Da Souza arrived he was glad to welcome his fellow-countryman, and his dusky sons and daughters played an important rôle in enabling the Portuguese colonists to enter into friendly relations with the surrounding Indian tribes. The occupation of the highlands by the colonists speedily cut them off more or less from communication with the world and forced the Paulistas to become more and more self-reliant. They developed energy and daring in their new surroundings, and, as the colony grew, they acquired an independent spirit. With courage, boldness, and the hospitality of the frontier, they mingled ignorance and cruelty. The story of the colony, about which centers the early history of the development of the power of Portugal in Brazil, is in many of its features not unlike the story of the winning of our Middle West. Tales of hardship and privation, of encounters with hostile Indian tribes, of restless migrations westward in quest of lands and gold fill the pages of the historian of São Paulo, as they fill the pages of those who narrate the history of the Mississippi Valley. The Jesuits played an important part in the movement at first, but the people of São Paulo discovered after a while that the theocratic ideas of these representatives

of ecclesiastical power were in conflict with their liberties, and they hunted the Jesuits out of the country as diligently as they hunted out the savages who refused submission. The whole story has not as yet been told as it deserves to be. The genius of some Brazilian having the historical power of an Irving or a Parkman should be summoned to the task of giving to the world a complete record of this really wonderful chapter in American development.

The city of Santos is dominated by a hill rising above the town, on the summit of which is a shrine resorted to by the sick, who are reported to derive great benefit from the visit. A rather remarkable collection of wax models such as are generally displayed in medical museums, showing the nature of various diseases, is a part of the furniture of this holy place. The small parks of Santos, of which there are several, are well kept, and contain fine specimens of tropical plants. In one of the parks in the center of the city the municipal authorities have placed a colony of sloths. Some twenty or more of these animals live among the branches, and it was highly interesting, seated under the shadows of the trees, to look upward and watch the slow and deliberate movements of the creatures as they migrated from bough to bough feeding upon the foliage as they went.

That this is a very small world impressed itself forcibly upon me in Santos. Upon the first occasion on which I took a seat in one of the street-cars to ride from the city to the dock, where the steamer was lying, I ventured to ask of a gentleman, beside whom I was sitting, whether the car I had taken would convey me to my destination. I addressed him in French, and he answered me in that language, but

View of the Harbor of Santos.



Loading Coffee at Santos. Bananas Piled on Forward Deck.

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quickly said in excellent English, "You are an American, not so?" I answered in the affirmative, and he went on to tell me that he was a graduate of Cornell University, had married in the United States, and we presently discovered that we had a score of mutual acquaintances, among them one of my own classmates, who for years has been the honored professor of the German language and literature in Cornell.

The State of São Paulo produces from its fertile acres more than one-half of the coffee which is annually consumed in the world. While our steamer lay at the wharf we took on board five thousand bags intended for the coffee-market of Buenos Aires. There were twenty or more large steamers engaged in loading coffee. The sacks of coffee, which each weigh one hundred and twenty pounds, were carried on board on the backs of men. The bearers as they came to the hatch let the sacks fall upon a chute, and they disappeared into the hold, where a crowd of men were engaged in piling them. As soon as each bearer had dropped his burden he returned at a trot for another. The procession formed an endless chain of carriers, one half loaded with sacks, the others hurrying back for a new load. Their movements were quick and agile. There was little suggestion of "the land of mañana." The gang seemed to represent many nationalities. It was composed mainly of negroes, but I recognized Italians, Portuguese, East Indian coolies, and a couple of Japanese. They were all bareheaded, many of them barefooted, and all quite lightly clad. The perspiration fairly dripped from them as they dashed up and down the gang-planks. They earn from four to five dollars a day when engaged in loading, but employment is not constant. An attempt is being made to dispense with the service of men in

loading, and some of the warehouses are being fitted up with conveyors which are intended to carry the coffee-sacks from the storage rooms to the hold of the steamers as they lie alongside. None of these conveyors seemed to be in operation at the time we were there. The fact that Santos is a coffee-port was not only taught us by our eyes, but also by our noses. There is an all-pervasive smell of raw coffee on the docks; one detects it as one walks the streets.

The use of coffee as a beverage is quite modern. The ancient Greeks and Romans knew nothing of the fragrant bean. The native home of the plant is Africa, and *Coffea arabica*, which is the species generally cultivated, grows wild in Abyssinia. There are several other species, one of which, known as *Coffea liberica*, is very common on the western coast of Africa. The first references to the plant occur in Arab literature. There are a number of curious legends as to the manner in which the use of coffee arose. One tale, which I remember to have read somewhere, assigns the first use of coffee to the monks of the Convent of St. Catherine at the foot of Jebel Musa in the Sinaitic Peninsula. The abbot had long been vexed by his inability to get some of his monks to observe their vigils. They persisted in sleeping, when they should have kept awake. One day the goatherd of the convent complained to the abbot that he was having trouble with his flock; that they would not sleep; and kept him up all the night by their ungoatlike conduct, being apparently cursed by insomnia. The abbot made inquiries and discovered that this conduct was most noticeable when they fed in one of the ravines where there grew a shrub with red berries, upon which they browsed. He ordered the goatherd to bring him some of the leaves and berries

of the plant. This was done, and the abbot caused an infusion to be made, which he administered to certain of his most notoriously lazy monks. The potion had the desired effect, and they staid awake at night, after it had been given them. After awhile they came to relish it, and as the result of an accident, by which some of the coffee-seeds were scorched in a fire, the fact that the beans were improved by roasting and the infusion made more palatable, was discovered. Probably this story is a fiction. The use of coffee as a beverage was, however, confined to the region about the Red Sea until quite modern times. It first spread into Persia and Arabia. The pilgrims to Mecca learned to use it at Aden. The Hadjis brought a knowledge of the beverage back with them to Cairo and Constantinople. At first there was a great deal of opposition to its use by the Mohammedan rulers, and it was declared to be intoxicating, and therefore forbidden by the Koran. But the opposition proved ineffectual and the Syrians and Turks became confirmed drinkers of coffee. Its use was introduced into England in 1652 by a merchant named Edwards, who traded with Smyrna. At the end of the seventeenth century the Dutch began to grow it in Java, and early in the eighteenth century introduced the plant into their West Indian colonies and Dutch Guiana. A Franciscan monk, by the name of Villaso, is said to have taken the first coffee-plant to Rio de Janeiro in 1754, and from the little sapling, which he carried across seas, all the millions of coffee-plants in Brazil are descended.

The coffee-plant is a low shrub or tree with long, shining, dark green leaves. The blossoms, which are formed in the axils of the leaves, are pure white and fragrant. A coffee-plantation in full bloom is a beauti-

ful sight. The blossoms are succeeded by the berries, which, when ripe, are bright red. Each berry contains two seeds, or "beans," which are placed in the shell with their flat sides face to face. The gathering and hulling of the coffee employs a great many people in the season. The trees are pruned back, or pollarded, to en-

Fig. 8.—Coffee in bloom.

Fig. 9.—Coffee in fruit.

From drawings made by the mother of the writer in Jamaica, West Indies, 1846.

able the pickers to reach the branches. Little cultivation is required, except to weed the ground in which the trees grow and keep it mulched with rotten leaves and vegetable compost. In a coffee-plantation the shrubs are set out quite thickly, about five hundred to the acre. There are hundreds of thousands of acres planted with coffee in Santos, São Paulo, Rio de Janeiro, and the adjacent provinces. The cultivation has grown to such an extent that there has been a decline in prices, which the Brazilians have sought in part to overcome by restricting

planting. The coffee-growers of Brazil are resorting to the same tactics which have been used by agriculturists in other lands, which produce different crops. The consumer is being made to pay tribute. Soil and sun are ready to do their work, but the human agent is bent on keeping up prices, or forcing them to higher levels.

While thousands of sacks of coffee were being put into the hold, the forward decks were being piled high with thousands upon thousands of bunches of bananas. They were brought alongside in lighters, and then taken on board in slings lowered from the derrick-booms. The bananas were of the common variety, which is now known everywhere. But there are a great many varieties of the *Musa sapientium*, as there are of other cultivated fruits. There is a little banana not bigger than the thumb of a man, which grows in bunches not more than a foot in length, and which is called *dominico* by the Spanish-speaking people of South America. This variety is far superior in delicacy of flavor to the larger kinds, and is well adapted to be a dessert-fruit. I wonder why we do not find it in our northern markets. The fruit of the plantain, which by some botanists is regarded as a mere variety of *Musa sapientium*, by others as a distinct species, *Musa paradisiaca*, is generally cooked when green. Plantains are larger than bananas, coarser in flesh, and with less flavor. They are sliced like potatoes and then fried until thoroughly, brown and crisp. Thus prepared they not only look like fried potatoes, but taste not unlike them. The banana and the plantain were most probably introduced into South America from the far East. They do not appear to grow wild in the American tropics. The clearings on the hillsides and in the valleys about Santos

are covered everywhere with dense growths of bananas and plantains. The greenness of a hill covered with bananas can only be likened in its intensity to the greenness of the Irish hillslopes in springtime.

We did not make a long stay at Santos. Arriving a little after noon on September 13th we sailed just before nightfall on the evening of the day following. The forenoon of the latter day was devoted to sight-seeing and the futile quest of butterflies. The morning was cloudy and there were showers, so that my winged friends of the fields and gardens did not appear in any numbers and I was disappointed. Butterflies love sunshine. They are part of the world of light and cheer. I do not believe that in that old world of darkness, which existed under the fog-laden skies of Mesozoic times, there were many butterflies. That was the age of cockroaches. When our coal-beds were in the process of formation cockroaches were numerous and big, but I doubt if there were many butterflies.

The night was cloudy as we slipped out of the river and faced the sea. The wind was from the south, and there was a chill in the air. The lights of the shore quickly receded, and we went below to get our dinners, and pass the evening playing bridge-whist. The brilliantly illuminated and cosy cabin was in agreeable contrast to the dark, cold exterior. We knew we were approaching the south temperate zone, and began to think of getting out warmer clothing than we had hitherto worn.

Sunset at Sea.

(From a thumb-box sketch by the author.)

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The Cathedral, Montevideo.

The Presidential Mansion, Montevideo.

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CHAPTER IX

MONTEVIDEO AND THE RIVER PLATE

"By the rushy-fringed bank,
Where grows the willow, and the osier dank,
My sliding chariot stays."—*Milton.*

FOR two days we steamed southward at full speed. Now and then during the first day we saw on the western horizon the distant mountains which guard the eastern coast of the Province of Santa Catharina in Brazil. They were often lost among pale purple clouds, which they so closely resembled that it was only possible to distinguish them by their serrated outlines. During the second day we knew that the great Province of Rio Grande do Sul lay on our starboard beam. Our Captain, however, had plotted his course far off from the coast, and we vainly searched for a glimpse of the land. The shore is low like that of Uruguay and Argentina, and it is only by keeping close to it that it becomes visible from the deck of a steamer. The air grew colder day by day. The wind was from the south and seemed to have in it the tang of frost. The Captain said: "If I were to hold away to the southeast at the rate we are steaming it would not be very long before I should be able to show you icebergs."

On the morning of the third day after leaving Santos we found that we were steering to the southwest, and

shortly afterwards the prow of the ship came around and pointed due west. The color of the water began to change; it passed from deep blue into green, and then became yellow, and presently plainly showed that it was full of mud. We were approaching Maldonado, the southeastern port of Uruguay at the entrance of the Rio de la Plata. This mighty estuary is one hundred and eighty miles wide at its mouth. The drainage of the greater part of the southern half of the continent pours through it into the ocean. It is the widest river-mouth in the world. Its navigation is dangerous. In every direction there are shallows and treacherous sandbars. The navigable channels are subject to shifts and changes, and many a good ship has in times past stumbled upon the shoals and been hopelessly wrecked. The banks on either side are low, and but for the muddiness of the water, the seaman might not know that he had left the high seas behind him. When we entered the stream the wind was blowing from the southeast and the waves were choppy. The upper regions of the air were filled with a thin haze, through which the sun shed a pale light. A silvery sheen was imparted to the water. One of my shipmates, noting this phenomenon, remarked: "I now know why the name Rio de la Plata—River of Silver—was given to this body of water. It looks just like molten silver." Unfortunately history contradicts the pleasant fancy of my observant fellow-traveler. The early Spanish voyagers to South America had only one motive for coming to these far-off lands, and that was to acquire a store of the precious metals. The *auri sacra fames* reigned in the breasts of the conquistadores. The discovery by Sebastian Cabot and his comrades of a few silver trinkets in the possession of the aborigines who

lived on the banks of the river, and which they had obtained in barter from the distant tribes of the Andean region, caused the first visitors to the country to give to the stream the name by which it has since been known. In this connection it may be worthy of note that there is a widely spread belief that the name "Buenos Aires" was bestowed by the first settlers because they were pleased with the climate. But this is an historical error. The first settlers on their outward voyage had set up in the cabin of their ship a shrine to "Our Lady of the Favoring Breezes," and, borne by prospering gales to the spot, their leader, Mendoza, gave it the name Puerto Santa Maria de Buenos Aires. The airs of the Argentine capital are at times something like those of Chicago. Buenos Aires at certain seasons is a very windy city, and the *pamperos* which come from the southwest with almost cyclonic force are anything but agreeable.

We gathered at the rail and strained our eyes to catch a first glimpse of the land toward which we were heading. The first thing to appear above the horizon was the tall lighthouse on Lobos Island. Then on the starboard we made out the low coast of Uruguay. A little before noon we descried the eminence which dominates the site of the capital, and could say, as did the first explorer, "I see a mountain"—*Montem video.* At the foot of the hill, or Cerro, which is only 486 feet above sea-level, there presently appeared, rising like a mirage from the water, the roofs and towers, the houses and gardens of the metropolis of Uruguay.

The natural advantages of the port are not great. They are as small as those of Buenos Aires. But, just as the art of man has atoned for the failures of nature at Buenos Aires, so at Montevideo steps have been

taken at large expense to provide a system of breakwaters, enclosing a great area in which ships may safely ride at anchor. We steamed slowly and carefully to the entrance and slipped through the narrow passage which has been left where the breakwaters, lying at right angles to each other, nearly meet. The spume, driven by the southeaster which was blowing, fell in great sheets over the walls, on which, nevertheless, here and there were standing groups of men and boys casting their fishing-lines into the waves, and now and then bringing up a fish, which flashed white in the sunshine. The anchors went down and we waited impatiently for the officers of the port to come on board and grant us pratique. After an hour had passed the formalities were completed and we were informed that we might go ashore, but that we must be on board again at eleven o'clock, because the voyage would be resumed at midnight. It was nearly three o'clock in the afternoon when we found ourselves on terra firma.

The older portion of Montevideo is located on a ridge which juts out westward in the form of a low promontory, north and west of which is a shallow semicircular bay, at the western extremity of which stands the Cerro, surmounted by fortifications over which rise the tall masts of the wireless signaling station. On the eastern side the promontory faces the open waters of the apparently boundless estuary, the left bank of which trends to the northeast. On this side beyond the city limits are low shelving beaches, on which in recent years have arisen numerous bathing resorts. One of the most frequented beaches is the Playa Ramirez, behind which on higher ground is a great park (Parque Urbano). Farther to the east on the low shore are Pocitos and Capurro with beautifully arranged gardens and drive-

ways and a multitude of hotels, many of which compare favorably with the finest establishments of their kind in any part of the world. Montevideo is in fact not merely a great commercial port, but a seaside resort, to which the wealth and fashion of South America repair in the hot season. The municipality is growing rapidly and the numerous suburban towns and villages, which are connected with the older city by an excellent system of electric tramways, are increasing in size, as shown by the large number of new and unfinished buildings, about which workmen were swarming at the time of our visit. The population of the main city and its suburbs amounts at present to over three hundred thousand inhabitants, and it is therefore reckoned as fourth in the list of great South American municipalities, being only outranked by Buenos Aires, Rio de Janeiro, and São Paulo.

To "do" a great city in a few hours is easier now than it was fifty years ago. Then there were no electric tram-cars and automobiles with the help of which to annihilate space and save time. It may well be doubted, however, whether with the modern inventions we derive more pleasure from a tour of sightseeing than we did when we had to repose our trust in our own sturdy legs or those of a horse. We determined at all events to make the most of our brief stay in the capital of Uruguay. We resolved to keep our eyes and ears open, and to see and hear all we could in the time at our disposal, and to this end to employ an automobile for at least a part of our time.

The first thing which impressed us was the substantial nature of the improvements made upon the water-front and the solidity of the warehouses and other buildings about the wharves. The next thing was the

order and cleanliness which appeared to prevail everywhere. The third matter of remark was the absence of negroes. Coming from Brazil we at once noted the fact, that, though many of the people about us were swarthy in complexion, showing their Spanish and Italian descent, or even the admixture of Indian blood in their veins, there were no people of the African races visible. There are in fact few Africans in Uruguay and not many of these are domiciled in the capital. Uruguay is the last of the South American countries to have been settled. Its original colonists were poor, and did not indulge in the luxury of slaveholding to any great extent. The policy of excluding the blacks has since been followed, and the main immigration in recent years has been from southern Europe. The Uruguayans pride themselves upon the fact that racial questions are not likely to trouble their republic in the future. "Ours," they say, "is a white man's country."

We began our tour on foot. At the gates of the dockyard we passed the officers of the customs, who, seeing that we carried nothing more suspicious than umbrellas and cameras, saluted us in friendly manner and allowed us to pass on. Strolling upward into the town we came to the shop of a money-changer and converted a few English sovereigns into the coin of the country. The currency of Uruguay is on a gold basis and an Uruguayan dollar, or peso, is worth $1.035 in American gold. The contrast between values as expressed in the coinage of Brazil, from which we had just come, provoked comment. Instead of paying two hundred milreis for an afternoon paper, the newsboy demanded four centesimos. It certainly was a liberal price for that which we received and four times what would be asked

for a larger and better printed sheet in any North American city, but the price did not appear quite as startling as that demanded in Rio de Janeiro.

We presently came to the summit of the ridge upon which the city is built, and along the top of which is the main thoroughfare, the Avenida 18 de Julio. At intervals this avenue leads into small plazas or parks, about which stand the principal public edifices. The lines of tramways running east and west do not traverse these plazas, but pass around them, leaving the broad, well-made pavement, which intersects them, as a promenade for pedestrians. The first of these plazas which we reached was the Plaza Constitución. The open doors of the Cathedral attracted us, and we took a peep into the interior, which we found less interesting than its quaint exterior. We soon turned eastward and quickly walked through the tastefully arranged Plazas Independencia and Libertad. Facing the former is the Palacio de Gobierno, or Executive Mansion, over which the flag of the country was flying; on the latter stands the City Hall, a building of imposing size, but not especially attractive from an architectural point of view. Farther out the Avenida we were greatly impressed with the fine appearance of the new buildings of the University and the National Library. These would be an ornament to any city. The University is prosperous and well attended, especially by those who are desirous of studying law and thus indirectly of qualifying themselves for the service of the state.

We were struck by the marked difference between the domestic architecture of Montevideo and that of Rio de Janeiro. The residences are low and almost invariably provided with a patio, or inner court, as in Spain and North Africa. Of this inner court, adorned

with blooming plants, either growing in pots or urns, or else in beds, often surrounding a miniature fountain, it is possible to catch a glimpse through the glazed doors leading from the vestibule. The effect is altogether charming.

Our timepieces now suggested that we should adopt some method of more rapid transit, if the task of seeing the city was to be accomplished, and we first resorted to a tram-car and went out to the end of the line. We struck up an acquaintance with an elderly French gentleman. He informed us that he had long been a resident of Montevideo, and showed that he had prospered, if prosperity can be deduced from a well-groomed exterior, a happy air, and respectful recognition accorded to him by his fellow-citizens as they boarded and left the car. He was very affable and volunteered interesting information as to the uses of various public edifices which we passed and the names of the owners of many beautiful villas which appeared as we entered into the less densely populated portions of the town. He professed sincere affection for his adopted country, told us in glowing terms of the progress made in recent years, spoke of its vast pastoral wealth, and of its increasing commerce. It is not often that one meets an expatriated Frenchman who views with such complacent eyes the new land in which he has settled, and who does not very quickly announce himself as full of longing for a return to the banks of the Seine. At last he left us with a polite *Bon voyage, Messieurs.*

Near the end of the electric railway we were attracted by the rather imposing buildings of the Italian Hospital, which testified not merely to the benevolence of the Italian residents of the city, but to their devotion to the traditions of the land whence they have come.

The statues at the entrance bespoke an affectionate regard for the family which reigns to-day in the oldest of the Latin lands. The love still cherished for Italy by Italians who have embraced citizenship in the South American republics revealed itself to me on frequent occasions in interesting and pleasing ways. When the theme of conversation happened to be the land of the Cæsars it was sometimes amusing to observe with what enthusiasm and animation these exiles spoke of "our country" and "our king." For a moment the fact that they had forsworn allegiance to that king and had adopted citizenship in a cis-Atlantic republic seemed to be forgotten, as memory recalled the land of their birth. They love no less the land in which they were born because they have learned to love the land in which they live. It is natural and well that it should be so. It makes for the peace of the world. The sons and daughters of Italy, Spain, and Portugal, living in the republics of the south, appear to have a deeper affection for the lands which they have left behind them than is cherished by Anglo-Saxons and Germans in the great republic of the North. I smile as I recall the worshipful reverence displayed by an old Italian woman who was the *femme de chambre* in a house where I was a visitor, and who happened to spy upon the dressing-case an Italian decoration which I had left there after a festal occasion on the night before, when I had worn it. She eyed it for a moment, recognized what it was, and taking it up reverently, kissed it, saying: "How happy you must be to have received such an honor from *our* king."

It now became plain that if the remaining hours before sunset were to be employed to advantage we must secure an automobile. The chauffeur was instructed to take us to Pocitos. We had a peep at this resort

and saw some of the prettier suburbs of the city to the northeast. We came back in the last glow of the evening, while the stars began to twinkle above and the brilliant electric lights of the avenues responded below. It was time to think of dining. We found a good hotel and enough to refresh the inner man. The service was excellent, the viands palatable, and after our rather strenuous efforts to obtain a general idea of the city and its principal attractions it was good to rest. After dinner we peeped into a theater, where we did not tarry, as my companions confessed that they were not sufficiently "long on Spanish" to enjoy the play. One of them suggested that he preferred billiards, and the second of the two assenting, we went to a place where the game was being played. It was a large hall with a score or more of tables. I obtained a comfortable chair and an evening paper, and while my comrades punched the ivory balls, I read the news, puffed my cigar, watched the crowd of players, and kept my eye upon the clock. Everything was orderly. There appeared to be no betting, but of this I cannot be absolutely certain. Beer was being dispensed to the thirsty at small tables. The people in the room were genteel in dress, looking no different from similar gatherings in New York and Paris, save that here and there was a man whose costume showed that he was a gaucho from the country. My shipmate who had proposed this diversion was an Australian. He said that he had been a sheep-rancher in that land of the antipodes, and now struck up an acquaintance with a man who was engaged in the same business in Uruguay. His pleasure was apparently unbounded. "I tell you this is a great country!" he exclaimed. "This is a sheep country, and sheep countries are all right. That man I was talk-

ing to smelt of wool. It made me feel good to meet him." As my acquaintance had already confided to me that he originally was a veterinary surgeon, I ventured to ask whether, if his newly found friend had "smelt of the stable," he would have enjoyed his company as much. He cast a withering glance at me. "Naw! a horseman is not for one moment to be compared with a sheepman."

The clock marked half-past ten, and I told my shipmates that it was time for them to put up their cues and go to the dock. They assented, and in the moonlight we strolled down to the wharf.

The next morning our steamer was ploughing its way through the muddy waters of the Rio de la Plata. On the surface everywhere were dead fishes. As we afterwards learned, a strange and unknown disease had seized the finny tribes of the great river and millions of fishes had died. They were of all sizes and of many species. In places their bodies were lying thick upon the water, hundreds being visible at one time. The disease was not confined to the area of water below the city of Buenos Aires, but was prevalent throughout the length of the river. Had the destruction been confined to the lower reaches a suspicion that it was due to the pollution of the stream by the sewage of the city might have been entertained. But this was not the case. Many years ago after the building of the great Davis Island Dam on the Ohio River below the city of Pittsburgh there came a dry season, and the fishes in the harbor, poisoned by the contaminated waters, full of chemical matter and the drainage of the mines along the Monongahela, died and covered the water as they did the Rio de la Plata. But, as I had occasion to observe on an excursion made subsequently through the

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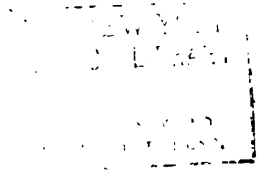
delta of the Paraná lying far above the city of Buenos Aires, the fishes in the upper part of the stream were infected as much as in the lower portions.

About nine o'clock in the morning we began to discern the groves of eucalyptus-trees, the tall chimneys, and the roofs of the loftier buildings of Ensenada, the port of the city of La Plata; and then the still taller eucalyptus-trees which fill the parks and line the avenues of the city of La Plata itself. It was all very distant and indistinct. Even a powerful glass failed to reveal much. Ahead of us several small Argentinian war-vessels were manœuvering. The larger men-of-war of the Argentine fleet have their rendezvous much farther to the south, at Bahia Blanca.

About noon we entered the channel, which has been dredged through the muddy bottom of the river for many miles, and which leads to the entrance of the docks at Buenos Aires. The city like a low grey cloud hung along the horizon, its features as yet scarcely distinguishable. So recently as twenty years ago large vessels coming to Buenos Aires were compelled to anchor in the stream six or seven miles from the city. Passengers and goods were carried in small lighters and boats to the shore, and final landing was often effected by means of carts with high wheels, which were driven out into the water alongside of the boats, which, unless quite small, could not reach the bank. This state of affairs was adjudged to be no longer tolerable, and accordingly a large loan was effected, and at an expense of more than $70,000,000 the present North and South Docks were constructed, and the channel through which we were slowly steaming was dug. It is just wide enough to allow two vessels to pass each other. Its course is a mathematically straight line until, as it

The Plaza Hotel, Buenos Aires.



approaches the city, it bifurcates, one channel leading to the entrance of the South Docks, and the other to the entrance of the North Docks. The channels are marked on either side by upright stakes, at the top of which electric lights are displayed at night. The current of the river throws the vast volume of mud, which is always being brought down, toward the right bank, on which Buenos Aires stands, and the operation of keeping the channel open by dredging goes on continuously throughout the year, and entails great expense. We passed a number of dredgeboats hard at work as we went up.

As we drew nearer and nearer to the city, several of my fellow-passengers, whose homes are in Buenos Aires, kindly pointed out to me certain buildings which are of interest. There is only one "sky-scraper" in the capital, and it does not loom up imposingly. The dome of the Capitol, recalling that at Washington, but smaller, was easily recognized. The great Plaza Hotel, standing on higher ground, presents its rather unbeautiful rear façade to the river; its imposing front faces the Plaza San Martin. The Palace of the President and various other public buildings were visible in part from the deck of the steamer. In the immediate foreground were the dock-walls, back of which lay scores of ocean-going vessels, their masts and funnels indicating the rendezvous in this port of the ships of many different merchant fleets. Behind them ranged in monotonous succession a long array of grain-elevators and warehouses.

The outward voyage had come to its end. The great ship, which had carried us to the willow-lined banks of the Plate, was slowly warped to her moorings at the custom-house landing. But there were port formalities to be arranged, and for nearly half an hour

we stood at the rail, looking down at the crowd, who were waving handkerchiefs and calling out words of welcome to the incoming passengers. I expected no one to meet me. One of my fellow-passengers, accompanied by his wife, was going to La Plata to assist in installing some of the astronomical equipment of the National Observatory, which has recently been placed under the charge of Dr. W. J. Hussey, the celebrated astronomer, whose achievements at the University of Michigan have given him international reputation. They told me that they had been informed by telegram that Dr. Hussey would be at the dock to greet them. They presently recognized him in the crowd; and I had the honor of an introduction at long range. The Professor informed me that a deputation of gentlemen from the National Museum at La Plata were on hand to welcome me. He quickly found them, and introductions, also at long range, took place, with waving of handkerchiefs and lifting of hats in salutation. The leader of the party was Dr. Santiago Roth, whose work is well known to all students of South American geography and geology. He was accompanied by Dr. F. Herrero-Ducloux, the brother of the Assistant Director of the Museum, Dr. Ernesto Herrero-Ducloux, who was prevented by illness from appearing, by Señor Miguel Fernandez, and Señor Debenedetti of the Museum. After all it appeared that I was not to find myself a stranger in a strange land.

At last the word was given, and we descended the gangplank. My newly made friends greeted me with the cordial warmth which characterizes the hospitable people of southern lands. Our baggage was found and a polite officer of the customs quickly "chalked" the pieces. We were hurried to a couple of waiting automobiles and whirled through the streets to the station

of the Ferrocarril del Sud on the Plaza Constitución. We were informed that by an arrangement kindly made by the authorities of the National University of La Plata we would have our home in the residence of the Director of the Observatory, which is very near the National Museum, and instead of making Buenos Aires our place of stay we would presently go to La Plata. A cup of tea in the handsome restaurant of the railway station was proposed, and, as the hour was early, Dr. Roth suggested that the journey to La Plata be deferred until about five o'clock, and that we should together take a little stroll through some of the more interesting parts of the great city. We went by tramcar to the Avenida de Mayo, the "Broadway" of the Argentine metropolis, recalling in many of its features the avenues of Paris. Seated in front of the restaurants were groups of well-attired men puffing cigarettes and drinking coffee, as they may be seen in the summer upon the boulevards of the French capital. The waiters, clad in white, looked as if they might have stepped out of the Café de la Paix. We felt as if we were not on American soil, but in France. We turned into the Calle Florida, the fashionable street for shopping, in which at that hour of the afternoon vehicular traffic is prohibited, and which was filled with a crowd of people bent either on business or pleasure. Gowns in the latest Parisian style were everywhere in evidence. Gentlemen in correct walking costumes passed along, bowing to acquaintances. At the corners young dandies congregated. The street, like most of the older streets of the city, is narrow. The shop fronts are imposing, and behind the plate-glass windows, the choicest products of European and North American skill were displayed.

We had not gone far when the writer recognized in

the throng his friend Dr. Bailey Willis, the son of one of the famous poets of America, himself a famous geologist. We had not met since some years before we had spent a pleasant evening together at the Cosmos Club in Washington. "You here?" and "You?" Explanations followed. Dr. Willis informed me that he was under engagement by the Argentine Government to carry on certain work in connection with the development of a great territory in the western interior, which it is desired to throw open to colonization. I explained my errand, and with the promise soon to meet again we parted company. Farther down the street we repaired to the principal depot for photographic supplies to pick up a few necessary articles. Then we wandered back to the Avenida de Mayo, and by tramcar returned to the railway station and boarded our train.

The railways in Argentina are largely under English control, they having been built by English capitalists. Some of the newer lines are the property of the State. The railroad mileage of Argentina at the present time exceeds that of all other South American countries combined. At the close of the year 1912 there were over twenty-six thousand kilometers of railway in operation in the country. The tracks are broad-gauge and the railway carriages are commodious. The appointments of the train which bore us out of the station in Buenos Aires to La Plata were sufficiently good to satisfy the taste of the most exacting traveler. The distance to La Plata is about thirty-one miles, and the run is made in less than an hour.

The sun was just setting as we left the railway terminal. The sky was overcast, but through a rift in the west a flood of sunset glory was poured across the world, reddening the lower surfaces of the clouds with crimson

and lighting up the white walls of the surburbs through which we quickly passed. To the east we caught glimpses of the river, now dark purple in the waning light. The sky-line toward the sunset was interrupted by buildings and by dark groves of eucalyptus. There had been a few showers during the day and the country roads along which we passed appeared to be veritable sloughs. From the Atlantic far into the interior there are no stones to be found in Argentina. The level province of Buenos Aires, when first discovered, was as free from stones as are the rich alluvial prairies of central Illinois. It has been said that from the borders of the River Plate for two hundred miles inland it would have been in the early days impossible to find a piece of stone as big as a cherry. The making of good country roads under such circumstances has been almost impossible. The streets of Buenos Aires and La Plata, where stone is used for paving purposes, have been paved with Belgian block brought as ballast in ships coming from Norway and Sweden. I was told that the curbstones in the city of La Plata had all been imported from European lands. The country roads throughout Argentina are very wide, having been given a breadth of forty meters, or more than one hundred and thirty feet. The motive for making the roads so wide was the fact that in former times, before the introduction of railways, the herders were compelled to drive their cattle and sheep for long distances to the ports, and they were forced to subsist on the way upon the herbage which these broad roadways afforded. They cropped and grazed as they went. The roads were intended to be broad strips of pasturage, as much as lines upon which traffic might be carried on by vehicles. In the rainy season the highways of Argentina outside of the cities

are little better than unploughed grazing land full of swampy pools. Here and there attempts have been made to throw up the soil in the middle in the form of a ridge and to dig alongside of this channels through which the water may be drained away. But the era of good roads has not as yet arrived in Argentina. Though there are thousands of automobiles in the capital, I suspect it would be rather a doleful undertaking at the present time to make an automobile tour through the country districts.

We passed through several large towns on the way to La Plata. The most important is Quilmes, where is located an important brewing establishment, said to be one of the largest breweries in the world. Quilmes beer is sold everywhere throughout Argentina and Uruguay. In the southeastern suburbs of the same town, near the railway, is a large glass-factory, engaged principally in making beer-bottles, hundreds of thousands of which, piled up in the yards, covered acres of the surface. The materials of manufacture are largely imported from Europe.

The night fell quickly over the landscape. We reached La Plata without having made a stop. On alighting from the train I was struck with the grandiose proportions of the railway terminal. It recalled Charing Cross or Waterloo. I said to Professor Roth: "The blood of a great many beeves must have paid for this structure." He laughingly assented, and said: "Yes; everything in this country is made of 'beef' or 'wheat.'" We stepped out of the depot upon a brilliantly lighted avenue. The carriage of the good doctor was awaiting us, and we were quickly conveyed to his residence, where from his charming family we received a welcome full of Teutonic warmth, and presently sat

The Railway Station at La Plata.

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down to a table abounding in good cheer. After dinner we were driven in the darkness to the residence of the Director of the Observatory, where we received another cordial welcome. The air was chilly, and it was pleasant to gather in the cosy sitting-room before the grate in which glowed a cheerful fire of Welsh anthracite. The fuel of Argentina as well as the pavements come from across the seas. We talked about the far-away land in the north which we had recently left. We discovered that we had many mutual friends. And then at last I was ushered into my bed-room, a chamber recalling in its appointments and lordly size the stately homes of Spain. Adjoining it was a handsomely furnished salon, which my host informed me I was free to use as a place in which to receive visitors.

The silence of the night was unbroken save by the voice of a small owl in the tree-tops, and I fell asleep dreaming that I was still being "rocked in the cradle of the deep," on which for nearly a month my nights had been passed.

CHAPTER X

LA PLATA

"Ampie salle, ampie loggie, ampio cortile
E stanze ornate con gentil pitture,
Trovai giungendo, e nobili sculture
Di marmo fatte, da scalpel non vile.
Nobil giardin con un perpetuo Aprile
Di varij fior, di frutti, e di verdure,
Ombre soavi, acque a temprar l'arsure
E strade di beltà non dissimile."

Francesca Turina Bufalini.

THE city of La Plata was called into being in the year 1882 as the result of political events. The combined influence of the province and city of Buenos Aires had so preponderated in the halls of national legislation as to have provoked the jealousy of the other provinces in the confederacy. It was therefore resolved to "federalize" the city, separating it from the province, and to give to the latter a new capital. The site for this was selected on the pampa, a few miles from Ensenada, which until the development of the system of docks at Buenos Aires had been the main port of entry for larger vessels coming to the River Plate. The spot selected was an expanse of treeless grazing land. A small arroyo, or brook, discharged its sluggish waters, drained from the prairie, into the inlet. This channel was forthwith deepened and converted into a canal, and a basin,

Teatro Argentino, La Plata.

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capable of holding vessels drawing twenty feet, was constructed at the upper end of the channel within the limits of the proposed city. Plans for the latter were drawn after the model of Washington. The streets were staked out and an army of workmen was employed to grade and pave them. The necessary funds to construct public buildings were secured by the issue of bonds, the credit of the province being pledged for their payment, and their erection was commenced at once. No detail was omitted. In addition to the buildings necessary to house the government offices, provision was made for a theater, for a zoölogical garden, a system of parks, an astronomical observatory, a university, a museum, a cathedral, in short everything deemed requisite to the life of a large urban community. Rapidly growing trees were planted along the newly planned streets and avenues. The officials of the province were informed that they must make the new city their home. The work was quickly done, and the town sprang up like a mushroom over night. During the early years of its existence there was a great deal of criticism. Many of the officials preferred to live in Buenos Aires, and only stayed in La Plata during office-hours. The growth of population was slow at first. Grass grew up in the streets. Visitors to Argentina in recording their impressions of the country slyly derided the "fiat city," and contrasted it unfavorably with the great metropolis with its hundreds of thousands of inhabitants a few miles away. One of my good friends, a Professor in Princeton University, when he learned that I was going to La Plata, where he had spent six months about ten years ago, informed me that I had a novel experience before me. "You will find a city with enough grass growing in its thoroughfares to feed

all the horses in Monmouth County. You will see an array of splendid buildings erected at vast expense, standing in almost deserted streets."

I had arrived in this city in the darkness of the night. I had detected no grass on the avenues over which the carriage which had brought me to my new home had rumbled. When I awoke I was filled with a strong curiosity to see the place by the light of day. I arose and looked from the window. I saw a beautiful garden in which spring flowers were blooming. The peach and apple trees were robed in pink and white. The song of birds was in the air. The fragrance of freesias, which bordered the parterres in great masses, was wafted to me, and the odor of the eucalyptus-groves which formed the background of the picture and overhung the house was gratefully pungent. After a bath I strolled into the garden, and found on every hand evidence that I was indeed installed in the midst of astronomical surroundings. There came back to me happy memories of pleasant times passed amidst like environment among my brethren of the astronomical cult at various places in the United States, in Tokyo, on the banks of the Cam in England, in Paris, and where upon the shoulders of the Glint the great domes of Pulkova are lifted above the broad river-meadows of the Neva. I was presently joined by my kind host, Dr. Hussey, and he pointed out to me the various edifices, and told me something of his plans and purposes to employ the equipment of the observatory in such a way as to make it useful.

The province of Buenos Aires has expended a large sum of money in providing instruments, but until recently has not always been successful in obtaining the services of an eminently competent astronomer to

take charge of them. The observatory connected with the old university at Córdoba, the capital of the adjoining province of the same name, though possessing less costly equipment than that in La Plata, has achieved notable results in the sphere of astronomical research. The observatory at Córdoba was organized in 1870 under the direction of Dr. Benjamin A. Gould, who for fifteen years continued the work, during which time the observatory published a number of very important papers. Dr. Gould was succeeded by his associate, Juan M. Thome, from Pennsylvania, and lately the direction of the observatory has been given to Professor Charles D. Perrine, whose work at the Lick Observatory had made him famous.

In April, 1887, fifty-six delegates, representing seventeen nations, met for the purpose of discussing plans for forming a great catalogue of the stars. Stars to the fourteenth magnitude were to be obtained on photographic plates. Each of the plates covers four square degrees. It was estimated that it would require eleven thousand plates to cover the entire visible heavens, and that upon these plates there would appear, as small white points, about thirty millions of stars. Out of these it was determined to select for the permanent catalogue the stars ranging from the first to the eleventh magnitude, estimated to be more than a million in number. Dr. Gould, of the Córdoba University, was one of the leading spirits in organizing this great undertaking. He, however, was unable to prosecute it very far, owing to his removal to America, and the work in the zones assigned to the observatory at Córdoba was largely carried on by Professor Thome and his assistants. The *Uranometria Argentina* up to date gives the magnitude of about eight thousand stars. In the *Córdoba*

Durchmusterung there are about half a million stars. In this work of photographing the southern heavens the observatory at La Plata was intended to take a very active part, but for various reasons very little has up to the present time been done. Now, however, the observatory has a most skillful astronomer at its head, and it may be anticipated that it, as well as the observatory at Córdoba, will begin to give a good account of itself. It is true in all scientific effort that something more is needed to achieve success than mere machinery. Of what use are the most advanced appliances if there be lacking the power to use them? The importance of the human element dare never be overlooked. Some very worthy people are obsessed with the idea that power is secured by the multiplication of machines, forgetting the fact that after all it is "the man behind the gun" who should be the supreme concern. Here I was standing in the morning sunshine, on the broad grounds of an observatory where hundreds of thousands of dollars have been spent in securing the very latest and best appliances for discovering the secrets of the skies, and yet where until this moment practically little has been done, except to supply time-signals to the naval stations of the republic, a service which could be rendered at an outlay of a fraction of that which this great establishment has cost. It is much easier to purchase a supply of scientific tools than to find a man with the genius to use them well.

It was with such reflections that I went with my kind host on a stroll through the grounds of the Observatory. He showed me the dome under which is the large refracting telescope, the almost equally large dome under which are the photographic telescopes. He pointed out a dozen other buildings large and small, all prepared

for use. He said: "There is here enough scientific apparatus to fully occupy the time of half a dozen astronomers." We returned to the residence. It is a large building, one story in height. In the middle are two open courts or patios. Surrounding them are the living apartments of the Director and certain members of his Staff; the library, containing a fine collection of books relating to astronomy and physics; and a number of offices and laboratories. The style of the building, as that of most of the homes in La Plata, recalls Granada and Seville. It was time for breakfast, which we enjoyed all the more for our little promenade through the grounds of the establishment.

We had not finished our meal when Professor Roth was announced. He appeared with smiling face, announcing that he had come to guide us to the Museum, which is situated in the park facing the Zoölogical Gardens, only a few steps from the Observatory. As the Museum was the objective point of our long journey, I was glad to immediately go with the genial Doctor, and confess that when I first saw its exterior and entered the building, I felt astonishment at finding so noble an edifice, so well adapted to its purposes, in this far-off land. The National Museum in La Plata owes its existence very largely to Dr. Francisco P. Moreno, naturalist, geographer, and statesman, who enjoys the reputation of being one of the leading citizens of Argentina. He devoted the earlier years of his life to the exploration of southwestern Argentina and Patagonia, and applied himself with unremitting assiduity to researches in various departments of the natural sciences. He thus laid broad and deep the foundations of the knowledge of his country which subsequently enabled him, as the High Commissioner of Argentina,

to successfully guide the negotiations which led to the adjustment of the boundary dispute between Argentina and Chili. He ably represented his country in the arbitration proceedings which were held in London and concluded before the late King Edward VII. A war between the two southern republics was thus happily averted. Dr. Moreno is undoubtedly one of the most learned men at the present time in South America, and a true patriot. When the plan of creating the new capital at La Plata was formed, he determined to give to the Museum the large collections which he had already made, and to consecrate to it his efforts and a large sum from his private resources. This great national institution may be regarded as a lasting memorial of the intelligent and self-sacrificing labors of this great man, whose best efforts were consecrated to its foundation, and of which he was the first Director.

At either side of the main staircase leading to the entrance of the museum are large models of the sabre-toothed tiger, a huge cat which once roamed the pampas, and which must have been more formidable than the jaguar of the present day. To meet the architectural requirements of their position, the figures are of colossal size, like the lions which are grouped about Nelson's Monument in Trafalgar Square. They very appropriately guard the entrance to this institution, in which is assembled one of the finest collections representing the animal life of the past in South America. The rotunda of the Museum, which the visitor first enters, is surmounted by a glazed dome and surrounded by a circular gallery on the second floor. The walls of the rotunda are decorated with large paintings representing the life of prehistoric man in the New World, the customs of the Indians of the pampas, who until

The National Museum, La Plata.

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yesterday continued to make a bold stand against the encroachments of the white settlers, and the landscapes of the Andean region. These paintings were executed by well-known German and French artists brought from Europe for the purpose. The view of El Tronador, the great alpine peak which dominates one of the valleys in the lake-region of Argentina, is particularly impressive. On the first floor of the rotunda, confronting the

Fig 10. Skull of Sabre-toothed Tiger, *Smilodon neogæus* Lund. ⅛ natural size.
Drawn from specimens in the Carnegie Museum

entrance, is the skull of an enormous whale. The collection of skeletons of the Cetacea in the possession of the museum is singularly large and fine. Many species, great and small, are represented. With the exception of the great collection of whales in the British Museum of Natural History made by the late Sir William H. Flower, this appears to me to be the finest assemblage of its kind in existence, and surpasses the British collection in the fact that it is odorless. Every one who has visited the "Whaleroom" at South Kensington carries away a memory of the disagreeable smell of whale-oil which pervades it. Here in La Plata they

have succeeded in so thoroughly bleaching the bones and removing the grease that no odor is perceptible. I asked how this had been accomplished and was shown a large tank in one of the courts, in which I was told that a skilful German preparator had carefully boiled the skeletons in a moderately strong solution of lye, which he diluted from time to time as evaporation took place. He certainly succeeded in performing his task most successfully.

In the same gallery to the left of the entrance, in which the skeletons of the whales hang from the ceiling, there is a considerable collection of mounted skeletons of recent vertebrates arranged upon the floor. Among them I noted with almost covetous eyes the skeleton of one of the strange *niata* race of cattle. In these creatures there has occurred the same modification of the bones of the cranium and the jaws which has taken place in the bulldog. The bones of the nose and face have become shortened, and the bones of the lower jaw have assumed an upward curve. Charles Darwin in *The Voyage of H. M. S. Beagle* speaks of having seen living specimens of these animals. He says:

> Their forehead is very short and broad, with the nasal end turned up, and the upper lip much drawn back; their lower jaws project beyond the upper, and have a corresponding upward curve; hence their teeth are always exposed. Their nostrils are situated high up and are very open; their eyes project outwards. When walking they carry their heads low, on a short neck; and their hinder legs are rather longer compared with the front legs than is usual. Their bare teeth, their short heads, and upturned nostrils give them the most ludicrous self-confident air of defiance imaginable.

According to information obtained by Darwin the

breed originated about the middle of the eighteenth century among the cattle belonging to the Indian tribes living to the south of the River Plate. When Darwin wrote, they were reported to be the commonest breed in the possession of the Indians, but in the vicinity of Buenos Aires were kept as curiosities. Dr. Bruch, the learned Curator of Zoölogy at the Museum of La Plata, informs me that the race is either verging upon extinction, or has already become totally extinct. Although it is still reported to survive in the Province of Catamarca, Dr. Bruch told me that a German naturalist, who recently visited Argentina for the express purpose of studying these creatures and traveled widely in quest of them, was unable to see or secure a single specimen.

Fig. 11. Skull of "pug-faced" or *Niata* cow.

In the semicircular gallery beyond the collection of skeletons is arranged a large assemblage of mounted mammals, and still farther on the visitor comes to the collection of birds. I was naturally interested in closely examining everything presented to view, and although upon the occasion of my first visit to the Museum I was only able to give a passing glance to the collections, I often returned at later times to study the specimens. In the center of the building and opening from the rotunda is the Gallery of Mineralogy, in charge of Dr. Walther Schiller. The very extensive

archeological and ethnological collections are in part lodged upon the first floor, but the greater portion are displayed in the galleries upon the second floor. The Curator of these collections is Dr. Robert Lehmann-Nitsche. Both Dr. Schiller and Dr. Lehmann-Nitsche are men of the highest scientific attainments, and their contributions to those branches of science, which they have made their special study, have given them international reputation. To the right of the rotunda we were ushered into a gallery, at the moment vacant, except for the wall-cases lining it and the presence on the floor of the still unfinished bases upon which the skeleton of the Diplodocus was to be set up. Here the Staff of the Museum, so far as able to be present, met us. We were told that Dr. Samuel Lafone-Quevedo, the Director of the Museum, was on the seas, hastening homeward after a vacation spent in Europe, and that Dr. Ernesto Herrero-Ducloux, the Assistant Director, who had been ordered by his physician to a health-resort, would be back in a few days, and I was handed a polite telegram from him, bidding me welcome in his absence. Dr. Santiago Roth, as Acting Director, informed us that the instructions sent by letter had all been carried out, and that the force of laborers connected with the institution was at our command. It was not long before we discovered that there were differences of opinion among the learned gentlemen present as to which would be the most effective way in which to display the great specimen. One advocated putting the head toward the rotunda, another advocated the reverse. One thought the tail should be stretched out to its full length, another thought that it should be mounted, as he had seen it displayed in Paris, with its tail curved forward toward the head. The discussion

was amusing and was volubly carried on in French, German, and Spanish, the disputants on the impulse of the moment passing from the use of one language to that of another. The ludicrous character of the debate finally provoked a burst of laughter, and at the suggestion of the writer it was decided that upon the whole it would be best to defer the settlement of the questions at issue until the return in a few days of the Assistant Director, who would have plenary power to decide them. It was pointed out that it would require several days to carefully unpack the thirty-four large boxes in the basement in which the replica had been brought from Pittsburgh, and possibly to repair some minor defects, should any breakage have occurred, and that no time would be lost by letting the matter go over until Dr. Herrero-Ducloux should resume his post. Orders were at once given to begin the work of unpacking. Thereupon Dr. Roth hurried me into the great halls of paleontology, which are his special domain, and pointed out to me the truly wonderful collection of skeletons of the extinct animals of Argentina which has been brought together. It was only a rapid glance which could at the moment be given to these things, but it was most illuminating and interesting. No collection in any museum is complete, but here I found what I think must be admitted to be upon the whole the best representation of the strange forms of mammalian life which once existed upon the pampas. Many of the specimens are singularly perfect, and all are well displayed and mounted. From the first floor we ascended to the second, and were introduced to the Librarian. We visited the Art Galleries in a hurried way, and the rooms in which the students of art in the University were pursuing their studies. Our round of these apart-

ments was merely preliminary, and was intended to enable us hereafter to be able to get our bearings. Then we descended to the basement and the laboratories and the work of opening boxes began. Thanks to the skill of the operatives in the Carnegie Museum and the good judgment employed in packing the specimens we found that there had been no breakage of consequence in anything which we took out that morning, and this experience was renewed on following days. Although our boxes had traveled farther than ever on similar occasions, the damage sustained in transport was less.

But thus far we had not seen anything of the "grass-grown" streets of La Plata. We were told that a standing invitation to lunch and dine at the Colegio Nacional of the University had been extended to us, and the Principal, Dr. Ernesto Nelson, came in person to reinforce the kind invitation. It was the noon-hour, and accordingly we quitted our work in the Museum, and repaired in company with Dr. Hussey and Dr. Nelson to the residence of the latter. Our walk led us by an avenue, lined with stately eucalyptus-trees, to the plaza, upon which stands the rather imposing building of the municipal court, then to the right, past the main buildings of the University to the buildings of the Internada, or students' lodging-house. But we found no grass in the streets. In fact the day of grassy streets in La Plata has passed. It has survived the days of its infancy. It is to-day a city of nearly one hundred thousand inhabitants, and is fulfilling the hopes of its founders. It is growing rapidly, and the fact of its advancement is most plainly revealed in the increase in the value of real estate which has taken place in recent years. Listening to the accounts given me by my friends, it was easy to understand that La Plata has

had, as we say in the United States, a very substantial "boom," which is not yet over.

From Madame Nelson, the charming and accomplished wife of the Professor, and from various members of the Faculty of the College, we received a pleasant welcome, and soon found ourselves at table surrounded by groups of manly young fellows, whose faces recalled days long gone, when we were students, and had lunched and dined in just such comradeship. If youth derives a quickening impulse from contact with those of maturer years, it is equally true that those of advancing years find pleasure and profit from mingling with those who are young. It was an inspiring sight to sit at table and look around over the company of fine young men which was gathered in the dining-hall. They represented the hopes of the best families in the republic. The composite nature of the population of Argentina revealed itself in the study of the faces before me. The language in use was Spanish, but the blood of all races showed itself in the countenances of the company. One young fellow with ruddy complexion and flaxen hair showed at first glance that he traced his descent back to "Merrie England"; another, of even fairer face, that his forbears had come from Sweden; there was no mistaking the Teutonic ancestry of a round-visaged, sturdy lad who sat opposite me; others showed by their darker complexion and their glorious black eyes that they were the inheritors of the traditions of the Latin races. In some of the faces there was an even darker tint, not unlovely, but attractive, which hinted at the fact, that, when the land was first settled, an Indian maid had consented to be wooed and won by some strong man of European lineage, and had been a mother to his sons. After luncheon many of these lads were intro-

duced to me. Their manly frankness and poise was delightful. They were indeed "young gentlemen." One of them confided to me that he was deeply interested in the study of geology and paleontology, and of course he was cordially invited to come to the Museum, and learn a few things which might possibly interest him. Another told me that it was his ambition, when he had completed his course of study in La Plata, to take a post-graduate course in North America, and asked me to tell him about the great institutions of my own land. We soon made friends. On this and subsequently on frequent occasions the writer had opportunity to observe with pleasure the manner in which Dr. Nelson and his associates, as the guardians of the social life of the students in the college of the University, are endeavoring to create in their minds a respect for the higher ideals of a true democracy. The maintenance of discipline and order is relegated very largely to the students themselves, who constitute a miniature republic, choosing their own officers, and laying down their own laws, subject to the friendly advice and suggestion of the Faculty. Dr. and Mrs. Nelson have both lived and studied in the United States, and are endeavoring to apply the principles of advanced pedagogic science to the practical problems before them. That they are succeeding cannot be doubted, and in years to come they will reap their reward in the gratitude of a generation of men, upon whose shoulders the government of the nation will then rest, and who will rise up and bless them for the loving sympathy and inspiring guidance which they received in their youth.

A few days later we were invited to attend the Commencement-exercises of the University. They recalled those of similar institutions in our own land three or

four decades ago, before academic costumes had come into vogue, and the pomp and ceremony which now characterize such occasions had been initiated. It all took me back to the days of my boyhood. There was a great gathering of the friends and kinsfolk of the young men. As a guest of the University I was invited to a place upon the platform, and from this point of vantage was able to scan the audience in which grave fathers, fond mothers, and smiling señoritas composed a picture upon which it was pleasant to look. It was not unlike similar audiences on Commencement-day in any North American college-town. There were depicted in the faces before me the same anxieties, the same hopes, the same pleasurable emotions, which I have seen again and again on like occasions at home. All the world is kin.

The President of the University of La Plata, Dr. Joaquin V. Gonzalez, who held the position of Minister of Justice and Education during the Presidency of Dr. José Figueroa Alcorta, the immediate predecessor of President Roque Saenz Peña, I discovered to be a man of lofty ideals and great personal charm. He lectures upon international law and diplomacy. Associated with him in the Faculty is Señor Don Agustin Alvarez, who likewise has held high positions in the government, and lectures upon the history of public institutions. For Dr. Alvarez I conceived great admiration. He is a diligent student of the institutions and the literature of the English-speaking peoples of to-day, as well as familiar with the best thought of continental Europe and his own land. I found him as ready to talk about Bernard Shaw as about Shakespeare, and as thoroughly acquainted with the writings of Theodore Roosevelt as with those of Alexander Hamilton. He has fine

command of the English language, and is keenly alive to the play of wit and humor. Seated beside me at table on the occasion of our first meeting, he began to apologize for his defective English. "My dear Doctor Alvarez," I ventured to say, "you should make no apologies. You speak English perfectly. But should you even now and then make a slip, what would that signify? Water in a cracked glass tastes as sweet to the thirsty as if proffered in one without a flaw. The purpose of language is to convey ideas." He turned and said: "Experience teaches me that language is not always a vehicle for ideas. Some men, who have a vast command of language, fail altogether to impart ideas. Loquacity without sense is a common phenomenon." I shall always remember this keen, quick-witted gentleman. It is a goodly company of brainy, high-minded men who have been brought together to form the Faculty of this new university of the south. I had the pleasure of meeting them all, and was greatly impressed with their attainments and their earnestness. It augurs well for Argentina that such men are in charge of the education of her youth.

I had been but a few days in La Plata when my kind host, Dr. Hussey, informed me that he had been instructed to repair to Rio de Janeiro to observe, on October 10th, a total eclipse of the sun, and insisted that I should remain where I was. In effect he turned over the residence of the Observatory to my care, bidding me make myself at home during his absence. I am sure he will testify that I did not interfere with the instruments, or meddle with the signal-service, which he left under the care of his assistant, Señor Chaves. His *major domo* cared for my wants, which were not many, and Mrs. Colliau with unfailing kindness attended to

having my eggs and coffee prepared for me in the morning. When occasionally of evenings I wearied of solitude, I had the pleasure of enjoying the kind hospitality of my friends of the Faculty, who invited me to their homes, or I now and then betook myself to the Sportman's Hotel, the leading establishment of its kind in the place, where I was almost sure to find certain "unattached" gentlemen of the Faculty, who were in the habit of dining there. The Sportman's Hotel is an institution of which I can only speak well, but it would hardly be double-starred by Baedeker. Why it bears its name is for me an insoluble riddle. The "ts" in the word *Sportsman* being unpronounceable by those who speak Spanish, it is called "Spormans Hotel" by the educated natives, and "Pormans" by the *cocheros*. There was a suggestion of propriety in the latter pronunciation in view of some things. But I passed some pleasant evenings there, and picked up a few acquaintances who amused me. One evening I came in a little early and found that I was the first person to seat myself except a tall handsome man of alert countenance, who was sitting at a small table next to that at which I had placed myself. He presently accosted me in pleasant tones and said, "You are a fellow-countryman of mine, I judge, why should we not take seats together?" An exchange of cards was made. I found that my acquaintance was a salesman, representing the largest firm in the United States engaged in the manufacture of firearms. For nearly a lifetime he had been engaged in furnishing weapons to the Central or South American states, now dealing with the governments in power, now furnishing the parties essaying to get into power with the munitions of war.

I sat until near midnight listening with unabated

attention to the tales my newly-found acquaintance told, realizing that in his graphic recitals of adventure there was material for many a romance as stirring as any which have made the reputations of noted writers, whom I might name. During the long years that he has been following his calling as a merchant of arms he has seen the inside of many stirring movements. He told me of the genuine patriotism and self-denial shown by some of the men with whom he had had dealings in the past, and he told me of some things which show that the devil still has his servants on this earth. I cannot repeat the tales he told me as they deserve to be narrated, and, even if I could, it would perhaps not be wise to do so. There is one, however, which I am tempted to outline, omitting the names, which I still recall. It is the tale of a railway which was stolen and sold as junk. In the northern part of the continent of South America there is a republic over which there ruled many years ago a President who had a worthless nephew. When the President came into power he provided for this nephew by putting him at the head of a railway belonging to the government. It was not much of a road. It ran from a small harbor on the coast about thirty kilometers into the interior and ended there. The salary of the scapegrace nephew was considerable, and was paid from the public treasury, irrespective of the earnings of the line. But although his salary was regularly forthcoming, the nephew had expensive and extravagant habits, and was always looking about for means to lay his hands upon more money than he received. It happened presently that Captain P——, an unscrupulous rover of the seas, who owned and commanded a couple of large schooners, with which he tramped from port to port, picking up

odd jobs, drifted into the harbor and struck up an acquaintance with the young man. After a while the Captain approached him, saying: "You are not making enough money on your line. Do you wish to know how you could make it pay you handsomely?" The Captain found a ready listener. "The thing is simple. Wreck it! Beginning up there in the country, take up the rails, and bring them down to the port. I will load them and sell them in New Orleans as junk. We can get about $100,000 for the stuff. I will accept one half as my share; you can have the other." Under pretense that the old rails were to be immediately replaced by new metal, the thing was done, slyly, quickly. When the storm broke, the Captain was across seas, and the nephew was in Paris. Both are dead now, and so is the President. Railways have frequently been stolen in the United States, but the thieves generally leave the rails upon the ground.

CHAPTER XI

ARGENTINA

"English and Irish, French and Spanish,
Germans, Italians, Dutch and Danish,
Crossing their veins until they vanish
In one conglomeration."—*Saxe.*

IF an outline map of Argentina were to be superimposed upon a map of North America, drawn to the same scale, with its southern extremity resting upon the southern tip of Florida, the northern part of Argentina would overlap the greater part of Labrador. The territory of the Argentine Republic extends from south to north almost as far as it is from Key West to Davis Strait. The area covered by the republic is equal in size to all of the territory of the United States east of a meridian drawn through St. Joseph, Missouri. As great a range of climate as that which prevails between Cuba and Labrador exists in Argentina. Tierra del Fuego has a climate like that of northern Norway and Sweden, but moister, and therefore less agreeable; while the Territory of Chaco in northern Argentina reaches into the tropics and has a very hot climate. The greater part of Argentina lies within the South Temperate Zone. Buenos Aires, the capital, is located on almost the same parallel of latitude as Capetown, the metropolis of South Africa, and the republic extends twelve hundred miles south of this point, so

that its southern extremity is as near the South Pole as Sitka in Alaska is to the North Pole. The climatic conditions are favorable to the Caucasian race, except in the extreme south and the extreme north. The people of Argentina, like the people of Uruguay, are fond of boasting that theirs is a "white man's country." The climate of Buenos Aires is not unlike that of Jacksonville, Florida. In midwinter, that is to say, in the months of July and August, a little hoar-frost is reported occasionally to have been seen in the suburbs after a cold night, and now and then a few needles of ice form upon shallow pools, but this is very uncommon. Farther south the winters are colder, and the temperature, throughout extensive areas, is much like that of New England and the Middle States, but, owing to the arid nature of much of this region, there has as yet been little effort made to effect settlement, and it is given over almost exclusively to sheep-herders and cattlemen, who wander about from place to place in quest of pasture for their animals. Still farther south, in the region of the Straits of Magellan, the winters are severe, although owing to the proximity of the ocean and the direction of the air-currents, they are not as rigorous as in northern Ontario, and southern Labrador, with which the latitude corresponds. There is an enormous precipitation of moisture in the southernmost part of the land. Snow falls in Tierra del Fuego in every month of the year, and when it is not snowing, it is raining. The skies leak perpetually. This fact has not deterred a few Scotchmen from taking up their abode there, and they are engaged amidst the mists, denser even than those of their own native highlands, in raising sheep, which are reported to do well.

Topographically Argentina is divided into three

regions. The first includes the plains of the eastern and northern parts of the country; the second embraces the Andean ranges and the high plateaus between them; the third is the elevated, more or less broken, and arid plateau of Patagonia.

The eastern portion of the country from the Rio Negro to the Pilcomayo is a vast plain raised but little above the level of the sea along the Atlantic, but gradually sloping upward toward the Andes and the northern interior. This is the region of the pampas. The word "pampa," which is of Indian origin and means "flat land," is used in Argentina very much in the same sense that the people of the Mississippi Valley employ the word "prairie." It designates a broad, level expanse of country more or less densely clothed with low vegetation. The character of the vegetation varies according to latitude. In the Provinces of Buenos Aires, Córdoba, Santa Fé, Entre Rios, and the Territory of Pampa, the prairies are absolutely treeless, except where in recent years groves have been planted; in the north they are more or less densely covered with palms and other tropical vegetation. These growths in the hot regions do not, however, form unbroken and continuous masses of forest, but are interspersed with open spaces, as was the case in the semi-wooded prairies of Illinois, when the land was first occupied. The appearance of the country is in certain localities park-like, and those who have visited the Gran Chaco dwell upon the fact that the forest-masses often display such regular lines as to suggest that they might have been planted by the hand of man, which, however, is not the case.

Along the entire western boundary of the republic rise the lofty ranges of the Andes, some of the peaks, as that of Aconcagua, reaching a height far exceeding that

of the highest Alps in Europe and like the latter covered with snow-fields and glaciers. From the main ranges in the northwestern part of the country there run out toward the southeast longer spurs, and in the western and southwestern portions many shorter spurs project nearly at right angles from the main range. Between the longer ranges in the northwest are high plateaus on which but little rain falls. Between the shorter spurs of the mountain masses in the west and south at the headwaters of the rivers, some of which discharge into the Atlantic, others of which in the extreme south send their streams into the Pacific through narrow gorges between the great peaks, nestle many beautiful lakes, filled with limpid water derived from the melting snows of the alpine summits which tower above them. The lake-region of Argentina is a realm of scenic splendor the beauties of which are only beginning to be known. Hitherto this part of the great land has been almost inaccessible, but those who have visited it are eloquent in their description of the wonderful magnificence of the scenery. In one of the lakes of this fairy-land Dr. Walter G. Davis a few years ago planted between two and three millions of the fry of the Speckled Brook-trout (*Salvelinus fontinalis*) of New England. The transportation of the eggs from Buenos Aires to Lake Nahuel-Huapi required twelve days and the use of six tons of ice. The ice lasted just long enough to enable the Doctor to reach the lake with his delicate charge uninjured. Had the journey required another day in which to complete it, the venture would have failed; but, as it was, the eggs were brought to their destination with little loss. Ninety per cent of them were hatched, and on March 14, 1904, the fry were put into the lake. Five years later to the day, on March 14,

1909, Dr. Davis caught three specimens, each weighing five pounds, twelve and one-half ounces, which he has now preserved in jars of alcohol in his office in Buenos Aires, where I had the pleasure of examining them. In a few years the western lakes of Argentina will be resorted to not only by those who are lovers of beautiful scenery, but by those also who are fond disciples of Isaak Walton.

Between the high mountain ranges and plateaus of the west and the wide eastern plains is a region of varying breadth and elevation, which is more or less arid, save where irrigated by streams flowing from the cordilleras. The soil in this region is in places strongly impregnated with saline and alkaline matter, and there are depressions in which brackish ponds and lakes have accumulated, and extensive areas in which the alkali reveals itself in the form of white incrustations such as are common in the "bad-lands" of Wyoming and Utah. The aridity of this tract is due to the fact that the high mountains of the west intercept the currents of air laden with moisture which come from the Pacific, while at the same time the winds from the Atlantic are met and checked in their onward westward flow by the downward currents of cold and dry air which flow eastward from the Andes. The southern part of Chili, unlike northern Chili which is almost rainless and barren, is a region where the rainfall is heavy and where dense and luxuriant forests of hard woods cover the land. But as soon as the traveler coming from the west has crossed the lofty snow-clad ranges and has reached the eastern slopes of the Andes and the plains at their feet, he discerns that the forests of beech and other woods have disappeared and that their place has been taken by cacti and crassulaceous

plants characteristic of dry soil. There are only a few localities, and these well toward the south, where the mountain wall is low enough to allow the rain-clouds to pass over, or where the chain is interrupted by valleys coming down to sea-level, forming gateways for the showers. Opposite these inlets on the eastern side of the Andes are limited tracts where rain falls in sufficient abundance to permit the growth of trees and rich pasturage. Such spots are, however, infrequent. Almost the whole of northern and central Patagonia is dry, and receives so little moisture that except in a few favored places there is no temptation offered to the agriculturist to settle. On the eastern coast in the Territories of Chubut and Santa Cruz, there are colonies of Boers from South Africa and of Welsh and Scotch, who are earning a somewhat precarious livelihood as sheep-ranchers, and about Punta Arenas there are extensive sheep ranges, but otherwise Patagonia is a land of desolation, which will require a great deal of effort to make it productive. "Dry-farming," as practised in our Western States, may succeed to a limited extent; but the higher levels must always remain more or less barren for lack of water, though the lower levels are capable of being irrigated by the rivers which traverse them. Irrigation has been practised for a long time in some of the older settlements. This is especially true about Mendoza, where there are great vineyards and orchards. At Mendoza the water flowing from the mountains is distributed by an extensive system of canals and ditches over the lower hillsides and levels, and the ground, which once produced little but cacti, has been made to yield rich returns. The population of the country is not at present so dense as to make the reclamation of the arid lands a question of burning importance, except

here and there; nevertheless the far-seeing men at the head of the government are already beginning to give the matter careful consideration. With an area equal to that of half the United States, Alaska excepted, there are in Argentina only about seven and a half millions of inhabitants, less than the population of Pennsylvania. There is still "elbow-room" for multitudes of people. Exclusive of the great Province of Buenos Aires, the country as a whole is still sparsely settled, and even in Buenos Aires there are wide stretches of land which are very thinly inhabited. To develop the country and attract population is one of the aims of the government. It was my pleasant privilege a few days after my arrival to receive an invitation from Dr. Bailey Willis to dine with him and to meet a number of his friends. Dr. Willis has been selected by the authorities of Argentina to conduct the survey of the region about Lake Nahuel-Huapi and to aid in opening it to settlers. The dinner took place at Charpentier's, a famous resort, which is the Argentinian equivalent of Sherry's in New York. Among those who were present at the dinner were Señor Ramos Mejia, the Minister of Public Works (*obras publicas*), Hon. John W. Garrett, the Minister Plenipotentiary of the United States, Dr. Francisco P. Moreno, of whom I have spoken in a previous chapter, Dr. Walter G. Davis, who for nearly two-score years has been at the head of the Oficina Meteorológica, Dr. Rollin D. Salisbury, the Dean of the Faculty of Science in the University of Chicago, and a number of other gentlemen of eminence representing both Argentina and the United States. The room was decorated with the entwining flags of the United States and of Argentina, and around the walls were large photographs showing Lake Nahuel-Huapi guarded by

mountains rivaling those of Switzerland in their massive uplift and beauty. Much of the time at this dinner was taken up in discussing the wonders of this region. The Minister of Public Works explained that the new railroad running from Port Antonio westward to the lake has already been completed for more than half of its length, and turning to Dr. Willis he said: "The remainder of the road I look to you, my dear Doctor, to see completed by the spring of 1914. The money to build the remaining miles is in the treasury." When this railway is completed it will open up a region as large as the State of Massachusetts; a country full of streams fed from the snow-clad mountains, having numerous waterfalls capable of driving as many spindles as are now driven by the Connecticut and the Merrimac. Into this region, Señor Mejia explained, it is the desire of the government to bring hardy and thrifty people capable of enduring the cold of winter. These people will become the pioneers in the development of a great state from the standpoint of the agriculturist and the manufacturer. "Those whom we wish to interest," said Dr. Mejia, "are your thrifty Yankees of New England and the industrious and hardy people of Sweden, Norway, and Switzerland. For such people we shall be able to hold out the inducement of farms at comparatively small cost, and opportunities for engaging in a multitude of industrial pursuits, for which unlimited electrical power derived from the waterfalls will open the way."

The republic of Argentina is advancing by leaps and bounds. Statements published as to population, resources, railroad mileage, and the production of various crops made only a year or two ago, are antiquated today. The people have tacitly concluded that revolu-

tions are not profitable. In the last century they were plagued with revolutions and counter-revolutions. To-day they have settled down to the conviction that an orderly government, well administered, affords the best opportunity for development. The spirit of commercialism and industrialism reigns supreme. The Argentino has ceased to be a politician in the sense in which he was a politician a few years ago, and has become, like the people of our own country, keen in the pursuit of the dollar. After all it is better that men should chase dollars than that they should chase each other with swords and bayonets.

In the development which has taken place in Argentina during the past three centuries the foremost part has been played by the Province of Buenos Aires. The first Europeans to sight the land were a party of Spanish explorers, who had set out under the leadership of Juan Diaz de Solis to find a southwest passage to the East Indies. Arriving in 1516, they landed, were attacked by the Indians, and their leader was killed. Disheartened they returned to Europe. De Solis was followed four years later by the illustrious Ferdinand Magellan, who on his voyage around the world entered the estuary and sailed for some distance up the River Plate, then turned, and went south without attempting to effect a landing. In 1527 Sebastian Cabot explored the rivers Paraná, Paraguay, and Uruguay for considerable distances, building a fort near the mouth of the Uruguay River and attempting a settlement not far from the present city of Santa Fé. Nothing came of these efforts except an increased knowledge of the geography of the region. Cabot was followed in 1535 by Pedro de Mendoza, a Basque of noble lineage, who had received from the Emperor Charles V. a grant of all of what is

now the most fertile and densely populated portion of Argentina, upon condition that he would conquer the country at his own expense and thereafter pay certain profits to the crown. He entered the river and sailed along the northern shore as far as the island of San Gabriel, and then crossed to the south shore, landing at the mouth of a small stream still known as the Riachuelo or "rivulet." He gave to the spot the name of Buenos Aires. The attempt to make a settlement proved a disastrous failure in the end, because of the hostility of the Indians. A permanent settlement in the region was, however, effected in the following year (1536) by a remnant of Mendoza's followers, who established themselves on the site of what is now the city of Asunción, the capital of Paraguay. An attempt to renew the settlement at Buenos Aires, made in 1542, failed, and it was not until 1580 that Juan de Garay, a Basque, coming down the river from Asunción, succeeded in taking the spot after a bloody conflict with the Querendi Indians, whom he conquered and forced to serve as laborers upon the farms which he allotted to his victorious followers. Four years afterwards De Garay was killed near Santa Fé by the Indians, who fell upon him at night while he was in camp on his way back to Asunción.

During the thirty-eight years which had passed between the first attempt to settle Buenos Aires and the successful occupation of the spot by Juan de Garay, a wave of Spanish colonization had swept into what is now Argentina from the west. The conquest of Peru by Pizarro and the Spanish occupation of northern Chili was quickly followed by a movement from the Pacific across the Andes. Expeditions from Peru established settlements at Santiago del Estero in 1555, at Tucumán

in 1565, and at Córdoba in 1573. An expedition from Chili in 1559 established a settlement at Mendoza, the name being given in honor of the leader, who must not be confounded with Pedro de Mendoza who had so signally failed in colonizing the region about Buenos Aires.

The occupation of South America by the Spanish was effected by expeditions which in going out from Spain very naturally followed the routes originally pursued by Columbus and his successors. Nombre-de-Dios on the northern shore of the Isthmus of Panama became the rendezvous of the Spanish fleets, and all commerce between Spain and Peru took place through that port. The region now known as Argentina was in the early days subject to the control of the Governor-General of Peru. Spanish commerce with South America was in the hands of a clique of wealthy merchants in the city of Cadiz, who by reason of their ability to influence the court had secured for themselves a monopoly of the carrying trade. They succeeded in effecting the passage of laws prohibiting all importation and exportation of goods directly by sea from the region of the River Plate and compelled all intercourse with the valley of the Plate to follow the route by Panama along the west coast and across the Andes. They even went so far as to cause regulations to be passed making it an offense punishable by death to ship in or out of the River Plate by direct ocean routes any goods whatever. Human governments have often been induced for selfish ends to violate the laws of nature. It may well, however, be called into question whether any more atrocious perversion of fundamental economical principles was ever enacted than in this case, where a community, with nothing between it and the mother

country except the broad highway of the seas, was compelled by law to transport its exports and imports across a continent, over a range of mountains from twelve to fifteen thousand feet high, for thousands of miles up the western coast, across the isthmus, and thence to Cadiz by a sea-route as long, if not longer, than that which lay between their ports and the home country. The little settlements on the River Plate by force of circumstances were compelled to become colonies of smugglers, and even the officials sent out from Spain to enforce the iniquitous regulations enacted at the suggestion of "the gang" in Cadiz, themselves became smugglers. In course of time the English and Dutch sea-rovers made sport of the sea-power of Spain, and English, Dutch, and French captains began to trade, in spite of Spanish prohibitions, with the colonies on the River Plate. Although the merchants of Cadiz protested, and threatened dire vengeance, sometimes even executed it, the shipmasters of the world began to find out that hides could be bought cheaply at Buenos Aires and that there was a ready market there for European goods. For nearly two hundred years the commerce originating on the great internal waterways which lead to and from what are now the republics of Bolivia, Paraguay, Argentina, and Uruguay was subjected to restrictions by the Spanish government which simply appear amazing in the light of modern progress, and even trade with Peru was after a while only allowed to be carried on subject to a duty of fifty per cent. ad valorem upon all goods either exported or imported. The Portuguese, who established themselves directly opposite Buenos Aires, at Colonia, carried on a very profitable contraband traffic. The people of Buenos Aires after a time became accustomed to buying

and selling on the other side of the river, in spite of governmental interdicts. The exactions of the Spanish rulers continued even after Buenos Aires had been in the year 1776 made the seat of a vicèroyalty. Under such circumstances it is no wonder that there finally grew up throughout all the region a spirit of determined opposition to Spanish control. If the people living in the English colonies of North America resisted taxation without representation, and found the Stamp-act intolerable, it is no wonder that the Spanish colonists in South America, having patiently endured for over two hundred years a system of exaction and repression, the most astounding in the annals of government, should have finally resolved to revolt. Following the example of the Thirteen Colonies in North America, and strongly imbued with the doctrines announced by the leaders of the French Revolution, near the beginning of the last century they threw off the yoke of Spain. The story of that revolution is too long to be told here.

Trained in the school of despotism, it is not singular that the people of these southern republics should have encountered great difficulties in establishing governments strictly republican in their nature. Though republican in name, most of the governments of Central and South America have been more or less oligarchical in their practical working. The nearest approach to true republicanism exists to-day in Argentina, where with great wisdom popular education has been made compulsory, and where the youth of the nation are being taught in the common-schools those things which are fundamentally true in the life of a democracy.

It was the good fortune of the Province of Buenos Aires to have reckoned among her citizens such a man as San Martin, one of the purest-minded patriots whom

any land has produced, and who as the years go by grows more and more in the esteem of men. Although in his old age he was treated with gross ingratitude and suffered exile and penury, his noble example, like that of Washington, has become an inspiration to the people of his country. Bolivar has been called "the Liberator," but the impartial student of South American history realizes that the exalted character of San Martin exceeds in rugged grandeur that of Bolivar as the sun outshines the moon. He it was who freed the southern half of South America from the yoke of Spain. The Argentine Republic also owes a great debt of gratitude to a man whom many now living recall as a friend and acquaintance, Sarmiento, "the Schoolmaster President," as he has been called. He realized that the greatness of a people depends not merely upon material resources and wealth, but upon the quality of its manhood; and he it was who set about founding schools for the common people and reorganizing the colleges and universities throughout the land. The work which he planned and began is now just beginning to bear rich fruitage.

Without attempting to outline the long story of the evolution of existing governmental institutions in Argentina, it may be said that underlying all the various movements was an impulse toward the establishment of a national life and consciousness. There were unfortunate episodes; many mistakes were made; unscrupulous and incompetent men at times essayed leadership and grasped the reins of power with attendant misfortune to the state; but through the maze of conflicting policies and varying experiments there emerged clearly and ever more clearly the purpose of a free people to secure for themselves the rights which belong to men

in virtue of their manhood. To-day Argentina is on the highroad of national prosperity, having nothing to fear except the dangers which arise from prosperity itself. After having read everything available, and having with my own eyes seen the results of the long struggles which have taken place, and having had the opportunity to learn from those who are to-day the leaders of public thought and sentiment, what are the aims and ambitions which they cherish, I cannot fail to entertain a deep and sympathetic interest in the people of this growing nation, who are surely unfolding a character which is destined to give them a high place in the future annals of civilization.

The population of the country is exceedingly composite. Argentina, like the United States, has become a melting-pot for the nations. Colonized originally by Basques, many of the names of the older families recall that fact, but all of Spain was ultimately represented upon the soil. During the past century there came into the land not a few people of English, Irish, and Scotch extraction. The Germans are well represented and so are the French. From Southern Russia in quite recent years, there has taken place a large influx. During the past forty years there has been a very great immigration of Italians. It is a curious fact that owing to the cheapness of steerage-passage from Naples and Genoa there occurs every year in Argentina just before the planting time and before harvest, a mighty inflow of Italian laborers, who help to sow and garner the crops, and then quietly take ship again and return to Italy, where they arrive in time to render the same service in their own country. Great groups of laboring men make the annual pilgrimage from southern Italy to the Plate, and sell their services for the busy months

of the year in the wheat-fields, and then go back to their homes. Some, who come with the expectation of returning, settle down in the land, and thus a very large part of the more recent additions to the population have been Italians. The study of the railway maps and of the names of stations and towns reveals in an interesting manner how exceedingly various have been the nationalities of those who have occupied the soil. Temperley, Claypole, Nelson, and Lincoln are towns with English names. Rauch and Lehmann are places concerning which it does not require a linguist to decide that they were settled by Germans. Names like these are sprinkled all over the map of the country, as well as names which are purely Spanish and Italian.

Buenos Aires, the capital, is a cosmopolitan city. The tendency of populations to concentrate in cities, which is characteristic of modern times, is illustrated forcibly in the case of this great community. There are about one million and a quarter of people in Buenos Aires. Rosario, the next city in size, has about two hundred thousand. More than one-fifth of the population of Argentina is gathered into its cities. There are thoughtful men, with whom I conversed, who deprecate this fact, as there are men in our own country who deprecate the tendency of the masses to congregate in the towns. The cry "back to the soil" is being heard in Argentina, as in the United States. Many of the wealthy citizens of the Argentine metropolis are in fact agriculturists and great landowners. Their presence on their estates being only required at certain seasons of the year, they have elected to live in the city and to enjoy the conveniences and social intercourse which are afforded by urban life. They may be pardoned for their choice, but for every millionaire who lives in the city there are,

as in our own crowded municipalities, hundreds and thousands of people who are packed together in narrow quarters eking out a miserable existence under circumstances decidedly unpropitious. Buenos Aires, like New York and London, has its slums and squalid tenement districts, many of the inhabitants of which would be far better off if deported to the pampas and made to take part in the healthful toil which falls to him who is a tiller of the ground. It is hard, however, to induce people who have lived in towns and cities in Europe, when coming to America, to adopt the larger and freer life of the open country. Farmers, like poets, are born, not made. To induce a man who has been trained to be a baker or small tradesman to become a herder or a plowman is as difficult as to transform a blacksmith into a sculptor, or a lawyer into a glass-cutter. It can be done now and then, but only in exceptional cases. The trouble in Argentina, as in the United States, is that a great deal of the recent immigration has not proceeded from the agricultural regions of Europe. Argentina, like North America, needs more farmers and fewer hotel-waiters, bartenders, petty shopkeepers, and people who live by their wits, without having any trade in which they excel.

Though there has been a rapid growth in population in Argentina in recent years, there is a comparative dearth of labor, and wages are very high. The protective tariff which has been applied to a number of the industries of the country has also had its effect in raising the price of labor and commodities. The cost of living in Argentina, as in almost all South American countries, is great. The increase in the value of land has been the main factor underlying the princely fortunes possessed by many Argentinian families. A few

years ago the government sold off at auction large tracts of land at little more than the cost of surveying it. The reserve price was about $400 per square league. A square league contains 6669 acres. Much of the land thus thrown upon the market was very fertile and admirably adapted both to grazing and agricultural purposes. While the number of human beings in the world is steadily increasing, the number of fertile acres is stationary. The hungry millions of Europe were calling for food; the men of Argentina discovered that they were in a position to supply it. They began to grow wheat and corn in a large way. They took to improving their live stock by importing the best strains of cattle and sheep and horses from Europe and North America. They discovered that by plowing under the rough grasses of the pampa and sewing alfalfa or lucerne they could secure perennial pasturage for their animals. Farming became profitable and the value of the land gradually began to enhance. Men who had bought great tracts for a few cents an acre awoke to find purchasers who were willing to pay anything from fifty to one hundred dollars per acre for their holdings. Many men who had bought a square league for $400 hold it to-day at $300,000. Men who bought, as multitudes did, from ten to twenty square leagues, are multi-millionaires at the present moment. Some men acquired great bodies of land, hundreds of thousands of acres, for a song; to-day they live in palaces, surrounded with luxury. As the result of this sudden and enormous increase in wealth there has been developed in many cases extravagance. There are not a few thoughtful men in Argentina who shake their heads as they observe this tendency, and the comments they made reminded me, as I heard them, of what I had

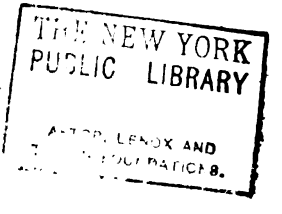
heard falling from the lips of careful students of affairs in our own land. It is a wise man indeed who knows rightly how to use prosperity.

The development of luxury, ostentation, and reckless extravagance on the part of the rich begets discontent among the poor. The result is reflected in envy, strife, and social disorder. This has been the teaching of history through all the centuries. The lands of the West need not expect to be exempted from the operation of those forces which have wrought in the human mind in all past ages. Human nature has not greatly changed since the days of Babylon and Rome. The injunction of the Apostle "not to trust in uncertain riches" is as applicable to nations as to individuals. The secret of true national greatness is found not so much in wealth as in moral character.

"What constitutes a State?
Not high-raised battlement or laboured mound,
Thick wall or moated gate;
Not cities proud with spires and turrets crowned;
Not bays and broad-armed ports,
Where, laughing at the storm, rich navies ride;
Not starred and spangled courts,
Where low-browed baseness wafts perfume to pride,
No;—*Men*, high-minded *Men*,
. . . . . .
Men who their duties know,
But know their rights, and, knowing, dare maintain,
Prevent the long-aimed blow,
And crush the tyrant while they rend the chain;
These constitute a State."[1]

[1] Alcæus, Paraphrased by Sir William Jones.

A View in the Zoölogical Garden, Buenos Aires.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CHAPTER XII

BUENOS AIRES

"Ships, towers, domes, theaters, and temples lie,
Open unto the fields, and to the sky,
All bright and glittering in the smokeless air."—*Wordsworth.*

SIGNOR NEGRI, who was born in Elba, stood at the entrance of the grounds of the Observatory, looking up at the sky, a vault of brilliant blue flecked here and there with white clouds. "Pah!" he exclaimed, "the sight makes me sick. Look, Monsieur le Docteur, at that sky—blue and white—the national colors of Argentina—blue and white—eternally that blue and white sky! I was born where the fogs often came up from the sea. I adore fog. I am happiest when it drizzles. But look at that audaciously blue and white sky! The sight fills me with bitterness. It will not rain to-day; it will not rain to-morrow. We are in for a long period of dry weather. I shall have to bury myself indoors to escape the depressing effects of that blue sky!" "But," I protested, "the sky appears beautiful to me. I do not wish it to rain to-day; I am going to Buenos Aires to see the Cattle Show, and the Botanical and Zoölogical Gardens." "Ah! Monsieur le Docteur, there is no accounting for tastes. You think that shamelessly blue sky beautiful? I do not!" We got into the fiacre, for which we had telephoned and which was awaiting us. The *cochero*

set us down in a few minutes at the railway station. It was a holiday. The workshops of the Museum were closed, and the men who were helping us had leave of absence. We had determined that it would be well to embrace the opportunity to see something of the Capital. We had reached La Plata in the dusk of evening. Now we would for the first time see the country between the two cities in the light of a glorious spring morning. One of the professors of the University met us at the station and kindly acted as guide, philosopher, and friend.

Shortly after leaving La Plata our attention was called to the fact that the road for a distance of nine miles traverses one of the great estates belonging to a wealthy family, the country residence of which, surrounded by a park and beautiful gardens, we passed shortly afterwards. Presently we were delighted to see on the right of the train scattered groups of American ostriches ranging in the fields. Some of them stood and looked at the cars, as they went by, others appeared to be more intent upon feeding and did not raise their heads. The Professor told us that these birds are preserved upon the estate, and that its owner is one of a number of gentlemen who are making an effort to save the species from extinction. The South American ostrich, as it is called, is more properly known as the rhea (*Rhea Americana* (Linnæus)). It is not a true ostrich, and is a much smaller bird than that of Africa. Its plumes have been extensively used for making feather-dusters, their principal use. But the supply will soon be exhausted, unless the poor creatures receive better protection than is now given them. On the Pereyra estate there are about one hundred and fifty specimens; on various other estates in the different

provinces there are a few; but, although there once were millions of them in the country, there are at most only a few thousands left. They are going the way of all wild creatures in the New World, and will soon become extinct, unless measures are taken to stay the hands of their persecutors. The smaller species named after Darwin (*Rhea darwini* Gould) is still not uncommon upon the Patagonian pampas, but they also are rapidly decreasing in numbers with each succeeding year. To the left of the train we saw a large herd of English deer feeding in an open space between two groves of eucalyptus-trees. In the grass a little farther on we noticed some Belgian hares. They have been introduced into the country and are multiplying rapidly, and are reported to be doing considerable damage to the crops in certain localities. As the train swept by the hamlet of Conchitas we spied two llamas feeding in an enclosure; one was dark brown in color, the other was white. The llama is not a creature of the pampas, but of the Andean region, and, like the camel, is only known in a state of domestication. The guanaco, a much smaller animal, which is closely related to the llama, still exists in considerable numbers in a wild state upon the less frequented pampas of Patagonia and among the foothills of the great mountains in the northern part of Argentina. As we came near the city we caught glimpses of the great river with its sky-line like that of the ocean. In the offing there were many sailing-ships and steamers. The number of full-rigged ships in these waters proves that steamers have not yet entirely monopolized the carrying-trade of the world.

On arriving in Buenos Aires my first errand was to the American Legation, to pay my respects to my honored

friend, Mr. John W. Garrett, the Minister Plenipotentiary of the United States. I shall never forget his hearty words of welcome. "I love this old Diplodocus," he said. "It brought us together in Berlin, and then in Rome, and now brings us together again in far-off Argentina." Sitting in his pleasant office, about which hung pictures of many of the great men of our land, I felt as if the seven thousand miles which separated me from home had been for the moment annihilated. I should be recusant to the promptings of my heart if I failed to here record my sense of indebtedness to Mr. Garrett and his charming wife for the gracious hospitality which they showed me during my stay in the country. The American Legation faces the Plaza San Martin. Nearby the Plaza Hotel raises its front. There are many hotels in the capital, but the Plaza is reputed at present to be the most modern and the most luxurious in its appointments, a house worthy to be compared with the best in any city of the world.

On the outward voyage I had been told that I might count myself fortunate in view of the fact that I should have an opportunity to see the great annual Cattle Show in Buenos Aires. I heard a great deal from certain of my fellow-passengers, whose homes are in Argentina, about the marvelous progress which has been made during the last forty years in raising blooded stock upon the pampas, and, as but one or two days remained in which to visit the exposition, I went to the grounds, which are located in the beautiful suburban district known as Palermo. The display takes place under the auspices of the Sociedad Rural Argentina, which many years ago purchased the site and has erected upon it the extensive series of buildings which now adorn it. After passing through the main entrance leading from

the Avenida Sarmiento, we found ourselves in a large enclosure, tastefully laid out with broad walks and driveways. In the spaces between these were parterres of flowers and blooming shrubs. A large restaurant stands at the left of the entrance. In front of it there is a band-stand occupied every afternoon by musicians. The restaurant is surrounded by a broad tiled pavement raised above the level of the grounds and enclosed by a balustrade. Here refreshments are served in the open air for those who prefer the sky as a canopy and at the same time desire to listen to the music. Located in the extensive enclosure are many pavilions for the display of the animals which are here brought together. Facing the main entrance is the race-track, on either side of which are two very large buildings with two hundred and twenty-four box-stalls for horses. On the northern or shady side of the race-track are the stands (*tribunas*) for the public, on the southern side the stands reserved for the members of the Society and their friends. There is in the northern part of the grounds another large building for horses, containing one hundred and sixteen box-stalls. Three hundred and forty horses can be stabled upon the grounds. The largest pavilions are those for cattle. There are four of these in all, with accommodation for nearly a thousand head. There is a pavilion of great size for the display of sheep, another for swine, another for poultry. Toward the south is a large space for the exposition of agricultural machinery; and at the extreme southern end of the grounds is the Agricultural Museum. There are barns and granaries for the storage of food-supplies, a veterinary hospital, quarters for the officials and the retinue of attendants, and kiosks in which display is made of cereals, vegetables, fruits, hair, wool, hides, tallow, fats, oils, ex-

tracts, preserved meats, dairy products, everything in fact which is the product of the industries represented by the farmer and the stockman.

We first went to the Central Pavilion, in which some of the bulls were on exhibition. There were about two hundred of them here, representing the Shorthorn, Hereford, Holstein, Jersey, and Aberdeen-Angus breeds. The animals were all of registered pedigree, and among them were some superb specimens. In addition to the animals in the Central Pavilion there were in the various pavilions for the cattle many hundreds more, bringing the total up to over nine hundred bulls and cows. As they lay at ease upon their beds of clean straw, chewing the cud, or following with their lustrous eyes the crowds of those who came and went, we were impressed by the fact that we were indeed in the presence of bovine aristocracy. Some of the beasts were truly enormous in size, and all were well groomed and sleek. I doubt whether anywhere in the world at the present time a more impressive exhibition of this sort is to be seen. The pavilions are open on all sides, admitting a free circulation of air, the roofs are high, and there is good light. The names of the animals were all displayed upon neat labels, some of which also gave an account of the pedigree of the individual. The vast majority of the names of the Shorthorns were English and attested their British ancestry. "Fire-King," "Baron Oxford," "Iron Duke," "Druid," "Waterloo Victor," "Shenley," "Cameronian," "Lucky Jim," "Sunny Jim," "Polar Beauty," "Lincoln," and "Roosevelt" were names which caught the eye. "Queen Victoria," "Lady Alice," "Diana," "Red Rose," and "Blossom" were queenly animals. It was amusing to listen to the pronunciation given to

A Herd of Blooded Cattle on the Pampas.

The Meat of the Country.

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these names by the attendants who spoke Spanish or Italian.

We next inspected the stables. Some fine horses were on view. Arabian, Clydesdale, Percheron, Shire, Suffolk-Punch, Boulonnais, Anglo-Norman, and Hackney stock were represented. But I hardly found the display of horses as interesting as that of the cattle. There were only two hundred and eighty-eight horses and one ass on exhibition; before the nine hundred bulls and cows, the equine cohorts seemed small. Furthermore, the box-stalls surrounded by gratings, through which it was necessary to peer, and the rather dim light of the pavilions did not allow the horses to be seen to the same advantage as the cattle, which were displayed in open stalls under a better light.

The sheep were interesting. The animals exhibited belonged mainly to the various well-known English breeds, and they all seemed to be in remarkably good condition. To allow them to carry the fleeces they bore in a subtropical climate almost appeared cruel, but they apparently gave no evidence of suffering, though the place at the noon-hour was hot. We glanced at the exhibit of poultry, which was good, and then went to the Agricultural Museum. It is well arranged, the exhibits are carefully labelled, and the display is upon the whole instructive, enabling the student at a glance to gain a good idea of the agricultural resources of Argentina as a whole and of the separate provinces in particular. Whoever is in charge of the institution has correct ideas as to administration and the manner in which to convey instruction to the people.

The early settlers of South American lands brought with them cattle and horses of the races which at that

time were common in Spain and Portugal. Some of them escaped, and finding upon the pampas sufficient pasturage, rapidly multiplied, until wild cattle and horses became numerous in Uruguay and in the provinces south of the Rio de la Plata. The Indians learned to utilize the cattle and became horsemen, as did the aborigines of the Western plains of North America. The cattle were long-horned, shaggy, and of medium size, closely resembling the semi-domesticated cattle of Texas. The horses were stocky creatures like the bronchos of our own Western States. As the country began to be more thickly settled and divided into estates, the range-cattle were brought within enclosures, and the herds came to be recognized as belonging to certain owners. They were branded or marked. For a long time hides, hair, tallow, hoofs, and horns were the principal exports, though "jerked beef" salted and dried in the open air was shipped in considerable quantities to the lands to the north nearer the equator. Meat thus prepared is still exported, and in Bahia and Rio de Janeiro I saw slabs of salted beef half an inch thick, a foot wide, and from two to three feet long, hanging at the doors of the grocery shops alongside of dried codfishes and bunches of smoked herrings. It did not look appetizing to me, but it is extensively used by the poorer classes in Brazil, and, when cut up and boiled with vegetables, may serve to add some nutriment and flavor to the mess. In the year 1889 the exportation of live cattle to England was begun, but the animals were so poor in quality that the experiment was not profitable. This led to the importation of blooded stock, and to-day throughout the older and more thickly settled provinces the long-horned Spanish cattle have almost entirely disappeared. The owners

of great estates spent fabulous sums in acquiring breeding animals of the best strain. As much as $35,000 was paid for single bulls. Three-quarter bred cattle mainly of the Hereford and Shorthorn type are found everywhere, and on some estates the herds are pure-bred Shorthorns. Owing to the foot-and-mouth disease the shipment of live cattle, which rose to great proportions about the middle of the first decade of this century, has latterly fallen off. The shipment of frozen meats has, however, steadily increased, and a large amount of British and North American capital is being invested in this business. One of the reasons for the prosperity of the stock-raisers of Argentina has been the introduction of alfalfa. The pampas have been plowed over and seeded with this useful forage plant; the rough harsh grasses have disappeared from wide areas; and through the entire year the perennial alfalfa, which sends its roots deep down in quest of water, continues to supply an unfailing yield of rich, nutritious food. The grazing lands between Buenos Aires and La Plata covered with numerous herds of sleek cattle are an impressive sight.

After having rested awhile and partaken of some light refreshments, we went across the Avenida Sarmiento to the Botanical Garden. It is not very extensive, but is well-arranged, and the plants are set out in such a way as to illustrate to some extent the sequence of the natural orders and their genera. It apparently is designed to be a living manual of botany. The flora of Argentina, so far as represented, naturally riveted our attention; but there were not as many Argentine species as I should like to have found. Exotic and naturalized plants seemed to preponderate, especially trees representing the flora of Australia. Over thirty

species belonging to the genus *Eucalyptus*, or closely related thereto, are growing upon the grounds. The eucalyptus has become the popular shade-tree in subtropical South America, and is grown everywhere. I was informed, however, by Dr. Roth, that it does not propagate itself by seed sown naturally. In the parks at La Plata and upon the grounds of the Observatory I searched in vain to find young eucalyptus-trees growing where seed had fallen. I am told that special precautions must be taken to propagate the young plants, and that wind-sown seeds do not appear to germinate, or, if they do, the plants die. Whether this is due to soil or climate, I was unable to learn.

The Zoölogical Garden, which is under the care of Dr. Clemente Onelli, is large and attractively arranged. It appears to be a favorite resort of the people, and was thronged with visitors when we reached it about three o'clock in the afternoon. It is true the day was a holiday, but on the occasion of a subsequent visit I found, though it was not a holiday, a great gathering of young and old people filling the grounds. The collection of animals is extensive and they are evidently well fed. The jaguars were particularly fine. There were a number of them, some of which were very large and powerful brutes. At one time the jaguars did a great deal of mischief among the cattle in the northern provinces of Argentina, but their numbers have steadily decreased in recent years, and in the immediate vicinity of Buenos Aires they have become totally extinct, and it is only when a great freshet occurs in the river, and floating islands of driftwood are brought down from the tropical north, that stray specimens now and then appear. On the occasion of a great flood in the Rio de la Plata which took place a few years ago, I was informed that

Guanacos in the Zoölogical Garden at Buenos Aires.

The Dairyman.

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two jaguars, which had been brought down by the stream, came ashore near Montevideo and were killed in the outskirts of the city. At the time of these great floods multitudes of snakes and other living things are brought down from the tropical jungles, and species not known to occur in the vicinity of Buenos Aires are found at such times in considerable numbers even in the streets of the city. At the time of the last freshet a couple of boa-constrictors were discovered upon the docks.

We were much interested in observing the guanacos, a small herd of which are kept within an enclosure. They are survivors of the camel-like animals, which originated in the region of the Rocky Mountains in early Tertiary times, and migrated to the south after the Isthmus of Panama was formed, and a land connection between North and South America had thus been provided. The tribe died out in North America, but survived in South America. The true camels also originated in North America and passed over into Asia by way of the land-bridge, which once united the northern portions of North America with Asia. They survived in the eastern after they had become extinct in the western hemisphere. No fossil remains of camels have been found in the Old World, except the bones of the existing species found in the uppermost gravels, but in North America the remains of many species of camels and cameloid creatures are very abundant. Only a few years ago one of my associates in the Carnegie Museum discovered more than twenty skeletons of a very small camel buried in close proximity to each other, and took them up. The skeletons of three of them, a male, a female, and a half-grown individual, have been mounted and are displayed in the Carnegie

Museum. In certain respects they are not unlike the guanaco of to-day, though very much smaller, not larger than a small Italian greyhound, and revealing greater specialization in certain features of anatomical structure than occurs in existing species. The guanaco has not been domesticated as was its larger cousin, the llama. The latter was the only beast of burden known

Fig. 12.—Group of skeletons of Pigmy Camels (*Stenomylus hitchcocki* Loomis) mounted in the Carnegie Museum. $\frac{1}{4}$ natural size.

by the natives in all South America at the time of the Conquest, and is still used as such in the Andean region. It was interesting to find in the Zoölogical Garden in Buenos Aires a guanaco which had been broken to the saddle and upon which children were riding at the time of our visit. Why should not an animal like the guanaco be domesticated? Simply because the Indians apparently did not make the attempt, should no effort now be made to perpetuate the species in domestication? Robes made of guanaco-skin are very soft and warm

and beautiful; and the flesh is palatable, quite as good as mutton, so I am told. Why in fact should not a multitude of other creatures, which now only exist in a wild state, be domesticated instead of being simply exterminated? What a dreary world this is going to be a thousand years from now, when, at the present rate of destruction, the only things left upon the surface of the globe capable of motion will be machines, bugs, chickens, cows, sheep, and asses—the latter principally of the two-legged variety!

The aviaries in the Zoölogical Garden at Buenos Aires are especially worthy of remark. I have visited every zoölogical garden in Europe and North America, and I am certain that in none of them are there any larger enclosures for birds than those which have been provided by Señor Onelli. This is as it should be. The largest of all the raptorial birds is the condor, and captive specimens in their own broad land should have an opportunity to stretch their great wings, and although unable to soar into the blue as they do in their native Andes, they should not be cooped up and confined in the narrow bounds usually allotted to such creatures elsewhere. It seems that the learned Director of the Garden in Buenos Aires has felt this fact, and the vultures, eagles, and hawks in his collection have a chance to fly, not merely to flap their wings. One of the birds which I was especially glad to see was a specimen of the harpy-eagle, a magnificent fowl, in splendid plumage, with great startling eyes. Its crested head gives it a regal appearance, and of all the birds of prey it is the most truly imperatorial in mien. The white-headed eagle which we have adopted as our "national bird" is not for a moment to be compared in grace and nobility of appearance with this fierce robber

of the South American wilds. Benjamin Franklin expressed a preference for the turkey as a "national bird," but, as the fowls used on national emblems according to the bellicose spirit of the past and Roman traditions have always been eagles, we chose an eagle to scream for us, but I do not know why our forefathers should have selected and placed upon our escutcheon the miserable "bald-head," which is at best but a cowardly thief and robber. If they had selected the golden-eagle it would not have been so bad. The harpy-eagle is a still finer bird. Of all the eagles I admire him most from the artistic standpoint.

Not very far from the grounds of the Zoölogical Garden is the Hippodrome, or Race-course, which is maintained by the Jockey Club. Horse-racing is a popular pastime in Argentina and the Hippodrome is one of the sights of the city. The fashionable and the unfashionable, the wealthy and the poor patronize the races, as they do in France, and Sunday, as in all Latin lands, is the day chosen for the sport. Large sums of money are won and lost at the races. The Argentinos, like the French, are given to gambling and games of chance. The lottery flourishes among them, and on the railway-trains, at the street-corners, and in the shops and stores we were constantly approached by venders of lottery-tickets, soliciting us to take a chance.

We lingered long in the Zoölogical Garden, finding much to interest us, but at last the sun began to sink toward the western horizon, and we were reminded that it behooved us to return to La Plata. We boarded a tram-car, warranted to take us to the Plaza Constitución. The route lay through narrow streets lined by the low houses which prevail in the residential sections of the metropolis. Let not the reader imagine that the

The Grand-Stand of the Hippodrome, Buenos Aires.

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whole of this great city, which nearly equals Philadelphia in the number of its inhabitants, is laid out with magnificent boulevards such as the Avenida de Mayo. By far the greater number of the streets of Buenos Aires are narrow, conformed to its original plan, running at right angles to each other and closely built up with houses of the Spanish type one or two stories in height. Avenues such as the great central thoroughfare leading from the Presidential Mansion to the Capitol, and the splendid Avenida Alvear, on which are gathered the homes of many of the wealthy, are the exception, not the rule. Buenos Aires, as we saw it on our ride from the Zoölogical Garden to the station of the Ferro Carril du Sud, conveys to the mind an impression of flatness and dull uniformity. Still there were things to arrest attention. We caught the milkman serving his customers rather late in the day. It was not after the manner of New York or Pittsburgh, with an automobile loaded with milk-cans, but after the good old Italian fashion. Two cows accompanied by a calf, the latter with a bag tied over its hungry mouth, so that it might not invade the fluid stores, had been led by the milkman and his boy through the streets. At the door of a customer they had stopped, and, while the children of the house stood by to watch the operation, the milkman milked the cows and filled the vessels which the children had brought out. The milk thus furnished is certainly pure, provided the cows have been fed upon pure food and not allowed to drink water infected by the germs of typhoid fever.

On a number of subsequent occasions we visited Buenos Aires either for business or for pleasure, and for nearly a week before sailing for home I made my residence in the capital and came to feel that I knew some-

thing of it. It is full of contrasts such as are found in every metropolitan center. The architecture in those portions which are not devoted to business and traffic is somewhat monotonous, as I have already intimated, but there are multitudes of imposing buildings possessing architectural charm. There are many parks both large and small, and care has been taken to plant in them such trees and shrubs as are adapted to the soil and climate. Palms imported from the north and from the region of the Mediterranean appear to do well. The suburbs of Palermo and Belgrano are very attractive and are adorned by many beautiful and costly villas surrounded by well-kept lawns and tasteful gardens.

The Argentinos are a pleasure-loving people, as is attested by the number of places of amusement which are to be found. The Colon Theater is the largest opera-house in South America and in fact in the world, surpassing in size and in the splendor of its interior decoration the great Opera-house in Paris. To it come most of the great operatic artists of the day, and to succeed upon the stage in Buenos Aires is a passport to success in Madrid, London, and New York. In contrast with the Colon Theatre may be put a hut which was found in the suburbs made out of old oil-cans, rescued from a dumping-place close at hand. The cans had been filled with earth and then piled up one upon the other to form four low walls. The edifice was then covered over with old roofing-tin, which likewise had been picked up upon the dump. The structure formed the sleeping apartment of an immigrant laborer, whose resourcefulness exceeded his resources. His kitchen had the sky for a roof; his pantry consisted of a couple of pails covered with pieces of board. Who can pre-

dict the future of this new citizen? Argentina is a land of opportunity. This man had at least found what the old Greek philosopher demanded, a ποῦ στῶ, a place on which to stand, if only for the time being. I have no doubt he is saving his pennies. He may have an account in bank, or in his stocking. His grandchildren may come to live in a palace on the Avenida Alvear. Stranger things than this have happened. The Vanderbilt of Argentina is a young man who came to that country a few years ago as a poor lad from Russia. His first employment was as a boatman. He rowed people to and fro from the water-front to the steamers, and saved his earnings, as did his North American prototype, the young Staten Island ferryman. To-day he is the owner of a great fleet of handsome passenger and freight steamers. Miguel Mihanovitch is a power to be reckoned with in Argentina, when the transportation question comes up for consideration.

The life of Buenos Aires is pervaded by restless activity. There appears to be as much hurry and bustle in the streets as in any of the larger cities of the world, more in fact than in some which are not accounted dull. Along the main thoroughfares there pours a constant stream of vehicles all through the day and deep into the night. The rush in busy hours is as great as on Broadway or Regent Street. I made my home in Buenos Aires at one of the quieter hotels on the Avenida de Mayo. The room assigned me on my arrival was at the front of the house, but the noise of the automobiles and the carriages on the street was so great and so continuous, only dying down from about two until five o'clock in the morning, that I was unable to sleep with comfort, and was glad to have my landlord assign me a room in the rear of the building, where the racket

and clamor of the street were less obtrusive and less disturbing. The policing of the streets is admirable, and though the traffic is heavy, the mounted policemen, who appear to be mainly Indians or half-breeds, seem to understand their business thoroughly and keep the currents of vehicles flowing as they should. Street-blockades are infrequent. Traffic holds to the left, as in England, and not to the right as in the United States. Cabs and automobiles for hire are almost all supplied with meters, recording the fare. The tariff is very nearly the same as in European cities, and less than in the United States; in fact a taxicab in Buenos Aires will render service for about half of what is charged for the same service in New York or Chicago.

The tendency to imitate the customs of Europe is in nothing more evident than in the uniforms of the police, the soldiery, and the employees of the railways. In the United States, even in our large cities, the military are little in evidence. It is not so in Argentina. Though the standing army is small, and in fact there is little need for an army, in every city of considerable size the military are to be seen. The bugle is heard, and the regiments march from their barracks to the parade-grounds just as they do in Paris or Berlin. The uniforms are showy. This is especially true in the case of one of the crack regiments of lancers, which still wears the garb in use at the beginning of the Nineteenth Century, at the time of the War of Independence. The infantry are uniformed more or less after the fashion of Germany, and so also are the mounted police. There is a decidedly "old world" look about these things, which does not fail to attract the attention of a visitor from the United States.

The semi-seclusion of the fair sex, which holds good

The Colon Theater, Buenos Aires.

Humble Home.

Built of Old Oil-Cans Filled with Earth; Roofed with Discarded Tin. Cooking is Done Outside.

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in Spain, prevails in all South American lands, which have inherited their customs and traditions from Spain. Ladies appear upon the streets more or less closely veiled, very rarely without escort, and never unescorted after sunset. For a woman to appear alone upon the streets, or to travel without escort, is sooner or later to subject herself to embarrassment. The free yet respectful intermingling of the sexes which occurs in northern lands is unknown here. The habiliments of mourning seem to be much affected by the women in Latin-American countries. I said to one of my acquaintances as we sat and watched the throngs of passers-by on one of the crowded thoroughfares: "There must be a frightful mortality in this city, judging from the number of people in deep mourning." He smiled and replied: "The women regard black garments with favor as setting off their charms, and rush into mourning on the slightest pretext. The town is reasonably healthy. Do not deceive yourself."

CHAPTER XIII

THE DELTA OF THE PARANÁ

"Wenn du am breiten Flusse wohnst,
Seicht stockt er manchmal auch vorbei;
Dann, wenn du deine Wiesen schonst,
Herüber schlemmt er, es ist ein Brei."—*Goethe.*

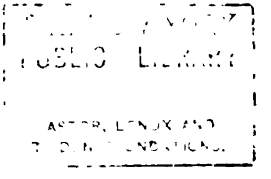
Translation

If you live on the broad river's brim,
It often runs shallow where once was a flood;
Then when you 've planted your meadows so trim,
The river comes up and smears them with mud.

THE morning of the second day of October dawned clear and bright. Dr. Santiago Roth had informed me on the previous evening that he had completed all the arrangements for an excursion to the delta of the Paraná, and had requested me to meet him at the railway-station in La Plata at an early hour, which he named. I was promptly on hand and we were soon in Buenos Aires. We rattled across the city in a cab and reached the Retiro Station, where we were joined by Dr. Bade and Professor Lucien Haumann-Merck, both of the Faculty of the University of Buenos Aires, both young, learned, and enthusiastic, the one a chemist, the other a biologist. With Dr. Roth, the head of the Geographical and Geological Survey of the Province, to act as chaperon, and with two such good fellows, full of information, to help make up the party, I was sure that I should learn much

A Guacho.

A Country Market-Place.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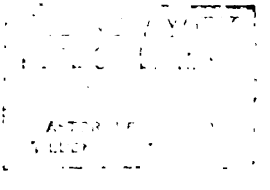

of interest. We boarded our train, and passing Palermo, the Hippodrome, and Belgrano with its pretty villas perched upon the slightly rising river-terrace, we came in less than an hour to San Fernando, a village tenanted by fishermen, longshoremen, and sailors. The population gains a livelihood from the waters, or, as boatmen, by serving the throngs of people who frequent El Tigre, the adjacent summer resort, which is to Buenos Aires what Coney Island is to New York. We alighted and were quickly driven to the dock, where a steam-yacht, which had been put at our disposal by the authorities, was lying at the landing. The captain was awaiting our coming, the steward kindly took charge of our luggage, and in less time than it takes to tell it, the screw was in motion and we were backing out into the stream. The vessel was provided with a cabin capable of furnishing comfortable accommodations for the party, and the larder was well stocked. The crew consisted of six men, including the captain, who was a Scandinavian. Dr. Roth informed us that our objective point was a gas-well which had been reported to him as having been recently discovered, and which he wished to see.

The channel in which we found ourselves was narrow, the water was muddy, the banks were lined with willows and small poplars, shading a very miscellaneous collection of boat-houses and shanties, having a rather dilapidated and tumble-down appearance. We soon left them behind us and began to thread our passage through the maze of waterways, which are the only roads in the delta. The day was bright and sunny, the breeze which was created as we swiftly went along blew refreshingly in our faces. Seated on the deck just before the wheel-house, we asked questions of the captain and received his replies.

The delta of the Paraná is made up of a series of islands, large and small, separated by a multitude of channels, the branching arms of the river, some of which in recent years have been deepened by the Government and made navigable for vessels of light draught. Here and there canals have been dug to furnish short-cuts from one point to another. Islands are strung in a continuous series on either side of the river from the delta as far north as Rosario and even beyond, but there are rather more of them on the right than on the left side of the stream. The Paraná discharges by two main channels, the larger lying to the north and receiving the Uruguay River just before entering the estuary, the smaller lying to the south. Both are navigable for ocean-going craft. Between these two main channels and on either side of them are countless islands forming the delta, which has an area nearly as great as that of the State of Delaware. These islands are low and flat, their surface raised at most only a few feet above the level of the water. All are subject to more or less complete inundation at the time of floods. The houses built upon them are raised upon piles, the lower floors being from eight to ten feet higher than the surface of the ground. Were not this precaution taken, the people would find everything afloat in their dwellings at least once or twice a year. There was a time not very long ago when these lands were regarded as more or less worthless. The inhabitants were squatters, who subsisted by hunting and fishing. Their chief source of revenue was derived from the sale of the pelts of the "Nutria" (*Myopotamus coypus*), a large rodent, the fur of which resembles that of the beaver. After a time some of them betook themselves to growing peaches and other fruits, which were found to thrive,

and for which a market sprang up in Buenos Aires. A number of years ago blight invaded the peach-groves and their cultivation was gradually abandoned. The peach trees were cut down and sold as firewood in the city market. The demand for firewood, as Buenos Aires increased in size, became insistent, and the people of the swamps took to planting willows and poplars, which mature quickly. The business proved profitable. The original forest-growth consisted mainly of the *Erythrina crista-galli*, a low papilionaceous tree, which in the springtime throws out from its gnarled and knotted branches great masses of purplish-red bloom. As these trees were cut down, they were replaced in every direction with plantations of Italian poplars and European willows. The native willow (*Salix chilensis*), which grows here and there, does not seem to make wood as rapidly as the imported European species, and it was only occasionally that we saw specimens of this beautiful tree. The weeping willow (*Salix babylonica*) is extensively planted and very common. As soon as the willows and poplars acquire a diameter of from six to ten inches, they are cut down and sawn into short lengths for firewood and carried to the market. We met scores of lighters towed by tugs, piled high with wood which was being taken to the wharves of the city. Though peaches are still grown to a limited extent, oranges have proved more profitable, and many of the islands are now covered with extensive groves of lemon and orange trees. The quince also does well, and, escaping from cultivation, it has taken possession of many tracts, completely covering them. The bushes, were arrayed in white bloom as we passed through the canals. The fruit when ripe is gathered, and quince-jelly in flat tin cans, like those in

which guava-jelly is put up, is one of the staple sweetmeats which is sold in great quantities in the markets and grocery shops of Buenos Aires. The value of these lands has appreciated, and men of wealth have purchased large holdings in the delta, and from the sale of firewood and fruits are receiving handsome returns upon their investments. Some of the wealthier owners have built for themselves summer homes on the islands, about which they have planted groves of eucalyptus and other ornamental trees.

After leaving San Fernando our course led us for a short time through narrow canals, and we then reached the great southern arm of the river, which we crossed. Looking north and looking south the water seemed to meet the sky. On either side the low banks of this channel are clothed with tall reeds and rushes (*Scirpus*) forming prairie-like expanses of blue-green marshland, back of which, on the slightly higher ground, were low fringes of taller and darker green growths. A number of large ocean-going vessels were in sight, either going up toward Rosario, or coming down. We made our way diagonally across the river to the entrance of another canal, through which we passed, reaching at length a larger stream on the banks of which was the station of the island-police, where we took on board a soldier in uniform. It seems that in this interminable tangle of islands and waterways travel is not always safe. River-thieves and desperadoes have found hiding-places, where they watch for opportunities to rob the unwary, and although our yacht was a government vessel, the additional precaution was taken of having on board a man clothed with authority to make arrests and handle a gun should occasion arise.

I was happy in the company of Dr. Haumann-Merck,

who from the stores of his botanical knowledge brought forth much for my information, and was able to answer the questions which were prompted at every turn by the vegetation upon the banks. He drew my attention to the fact that on the sides of the canals there were vast masses of a Japanese honeysuckle, which has escaped from cultivation and become a veritable weed, covering large areas and suffocating all other growths. The commonest plants representing the primitive flora of the region are *Senecio bonariensis*, *Eryngium paniculatum*, and *Solanum bonariense*. The Senecio grows abundantly in the marshes and sends up a cluster of large dock-like leaves from the center of which a stem from six to eight feet in height shoots up, surmounted by a great loose spike of white blossoms. The Eryngium has leaves which somewhat resemble those of the century-plant, but much thinner, not more than two inches thick at the base, and relatively longer, as much as four or five feet in length, with the edges protected by prickly serrations. It grows in great tangles upon the sides of the streams, forming almost impenetrable thickets. I could scarcely bring myself to believe at first that this plant, so closely resembling the agave in the form of its foliage, belongs to the *Umbelliferæ*. However, at our first landing-place my botanical friend speedily dispelled my doubts. He pulled off one of the leaves of the plant, and bade me smell its broken end. I at once recognized the familiar carroty odor of the umbel-bearing plants. The Eryngium unfortunately was not in blossom. The Solanum, which is a scandent or climbing species, was in flower, and displayed great masses of white bloom as it trailed over everything within reach. Occasionally we saw palms, but they were not numerous, and their proximity to dwellings

suggested that they might have been planted. In the canals and bayous there were abundant growths of aquatic plants, among them a natant *Pontederia*.

Birds were not as numerous as I had expected to find them. A few herons were seen on the wing. Cormorants (*Phalacrocorax brasilianus*) abounded. They hardly took the trouble to get out of the way of the vessel as it came toward them. Sometimes they rose and made a short flight, but frequently only dove to the right or the left and came up again a few feet away. The birds seem to be silent, and I never heard them utter any cry, but W. H. Hudson, who has written most charmingly about the birds of Argentina, says: "When many individuals congregate to roost on the branches of a dead tree overhanging the water they keep up a concert of deep, harsh, powerful notes all night long, which would cause any person not acquainted with their language to imagine that numerous pigs or peccaries were moving about with incessant gruntings in his neighborhood."

On the wider reaches of the river we saw a few gulls (*Larus maculipennis*). The *gaviotas*, as the natives call them, have the habit, which I have observed to belong also to the gulls of Scotland and Scandinavia, of following the plowman in the furrows to pick up grubs and worms. In Argentina they are viewed with favor by the country-folk. Hudson says:

> If the weather is dry the gulls disappear altogether; and if grasshoppers become abundant the country people wish for rain to bring the gulls. When it rains, then the birds quickly appear, literally from the clouds, and often in such numbers as to free the earth from the plague of devastating insects. It is a fine and welcome sight to see a white cloud of birds settle on the afflicted district; and at such times

their mode of proceeding is so regular that the flock well deserves the appellation of an army. They sweep down with a swift graceful flight and settle on the ground with loud joyful cries, but do not abandon the order of attack when the work of devouring has begun. The flock often presents a front of over a thousand feet, with a depth of sixty or seventy feet; all along this line of battle the excited cries of the birds produce a loud continuous noise; all the birds are incessantly on the move, some skimming along the surface with expanded wings, others pursuing the fugitives through the air, while all the time the hindmost birds are flying over the flock to alight in the front ranks. so that the whole body is steadily advancing, devouring the grasshoppers as it proceeds. When they first arrive they seem ravenously hungry, and after gorging themselves they fly to the water, where after drinking they cast up their food, and then go back to renew the battle.

I saw a number of the Yellow-shouldered Marsh-birds (*Agelæus thilius*), resembling our Red-winged Blackbirds, from which they differ apparently in being a little smaller, and having the shoulders of the male bright yellow, instead of red as in the case of our species. The female is somber in plumage and lacks the gay epaulets of her mate. There were many of these birds among the rushes as we entered the canal after we had crossed the river. Here I also caught sight of the Scarlet-headed Marsh-bird (*Amblyrhamphus holosericeus*). They were conspicuous objects as they clung to the tops of the tall rushes. I was happy to see the Cardinal Finch (*Paroaria cucullata*) alighting in a thicket. Its crested head recalls our own Virginian Cardinal, but the markings are different, the lower parts of the body being white, the back and wings gray, while the crested head and throat are brilliant scarlet.

This appears to be a common cage-bird in Buenos Aires, and many of them were exposed for sale in the markets.

The vessel steadily pushed forward hour by hour through the canals and wider reaches of open water. We maintained a speed of from twelve to fourteen knots. At last we came to a region where human activities were less apparent and the plantations of poplars and willows were less frequent. Here and there were tracts still covered with the gray, gnarled trunks of the *Erythrina*, the native forest-tree of the region, just beginning to put out shoots of green and preparing for the period of blossoms. Tufts of pampas-grass held up the dried feathery plumes of the former year. This plant, familiar to us from our lawns and gardens, is more frequent in the marshes than on the broad dry prairies, which most of us have imagined to be covered by it. It is a plant of the lowlands and swamps. The sun began to sink toward the western horizon. Clouds in long bars stretched across the sky. As the day waned they were lit up with the glory of the sunset. The breezes had died down, the bayous and streams became still and mirror-like. Not a dimple could be seen upon their wide expanses, save here and there where a fish leaped at an insect. The glory of the sunset grew and increased, the clouds became purple and crimson and then in the west melted into gold. The waters gave back in brilliant reflections the splendors of the sky. We seemed to be pushing our way forward with the sky above us and the sky below us, the two only parted by the low long fringe of trees on the distant bank, clad in the tender green of the springtime, reflected in darker greens from the bosom of the wide lake-like waterway through which we were going. At last the sun went down. The night comes quickly in these regions, and

our captain turned the prow to a narrow creek into which we ran, and where we presently came to a rude dock and a house perched high on piles. Here we made fast, and here we were to stay for the night, for to navigate these waters in the darkness is dangerous. We clambered out upon the dock and up a rickety flight of stairs, and found that we were in a country-store where everything imaginable was for sale and where everything potable from Quilmes beer to Italian vermouth and Scotch whiskey could be purchased. Perched on the edge of a swamp, the ground beneath the building was so wet that botanizing was quickly given up as certain to involve the risk of being buried in the quagmire. We wondered how any human being could have chosen such a place as a likely spot upon which to carry on trade. But during the evening boats came and went and customers slipped in from the starlit water with lanterns at the prows of their craft and gathered at the bar to drink, or made their purchases and then silently rowed off into the darkness as they had come. We dined on board and had occasion to compliment the cook upon the excellent meal which he served. We smoked our cigars upon deck; watched the brilliant reflections of the full-orbed planets in the mirror of the stream; told tales both grave and gay; and then turned in. How still it was! The only sound was that of the toads in the marsh. In the United States we welcome the sound of the "frogs" in the meadows as a harbinger of the springtime. Our "frogs," to be exact, are toads. The note of *Bufo americanus*, the common toad of New England and the Middle States, in the mating-season is a succession of chirps, quickly succeeding each other—"peep-peep-peep"—or a trilling note in a high key; the note of the Argentine toad exactly resembles

the sound of a castanet. I recall that on one of the first nights of my stay in La Plata I wandered out into the park, where my attention was attracted to the tinkling castanets of the little creatures which thronged the borders of the artificial lakelet near the Zoölogical Garden. It seemed as if a hundred fairy Spanish dancers were celebrating the advent of spring. In the darkness of the early evening in our own country the croaking of the toads in the marshes sometimes conveys a mournful impression, but in Argentina there is a merry tone and a note of gayety about their concerts quite consonant with the Latin surroundings. To the sound of these tinkling castanets, which were ceaselessly being played on the margin of the quiet river, I at last fell into a dreamless sleep.

When I awoke the light of the dawn was already shining through the port-holes. I heard the tramp of feet upon the deck and realized that my companions were already astir. Quickly dressing, I joined them. The morning was warm and as still as the night had been. Little wreaths of vapor were curling up here and there from the smooth surface of the water. The sun came up into a cloudless sky. Breakfast was soon served, and, while we were eating it, the screw again began to turn and we went on as we had gone the day before. We were now near the great main arm of the Paraná where it is joined by the mighty stream of the Uruguay coming out of the tropical woodlands of the north. Dr. Roth pointed across the wide river to the far-off shore and told me that I was looking upon the borders of the *Republica Oriental*, as Uruguay is called. On the horizon was the smoke of an ocean-liner steaming away into the pale haze of the morning.

At last we reached our destination, the home of an

Italian, who had purchased a place for himself in the lowlands, which he had improved by building a house and outbuildings, and where he had sunk an artesian well to get a supply of good drinking-water. To his amazement when the well began to flow it yielded water full of gas. We went to the well, which was discharging a constant stream of clear water through a bent iron pipe. The water was running through a number of tin gutters into the river. Dr. Roth struck a match and held it above the water. Flames instantly arose and for twenty feet the stream was covered with coruscating, lambent tongues of fire. To one familiar with the great gas-wells of western Pennsylvania it appeared a very tame little affair, but it was interesting to see how steady was the flow of the gas. It undoubtedly was marsh-gas, which had accumulated in the ground. The soil of these alluvial islands is rich in decomposing vegetable matter, and in places is almost as black as peat. The formation of marsh-gas in great volume is what might be anticipated from existing conditions. Dr. Bade collected a number of samples of the gas for analysis. Samples of the water were also taken. While the chemist and the geologist were attending to these matters, the botanist and the entomologist started out for a tour of exploration through the clearing, which showed the marks of having quite recently been overflowed. Deep drainage ditches had been run in different directions. Between them on the land which had thus been partially dried young orange and lemon trees had been planted, and an extensive vegetable garden had been laid out. The small son of the owner accompanied us. Butterflies were not numerous, though the sun was warm enough to entice them from their hiding-places. We caught some specimens of *Eresia anieta* and *Eresia*

simois (Frontispiece, Figs. 11 and 12); we obtained a few moths and dragonflies. Then at the suggestion of the boy we got into a boat and crossed over to the low shore on the opposite side of a creek which runs through the land. Here we saw in the water a number of large fishes known by the natives as the Dorado, golden in color, swimming about in circles just under the surface, and evidently in distress. Dead fishes of this and other species were everywhere visible. The strange disease of which I have already spoken in a previous chapter was doing its deadly work among the finny denizens of these streams. Just as we landed a flock of birds came circling through the air and alighted upon a tall dead tree not far off. My companion at once called my attention to them and told me that they were green parrakeets (*Bolborhynchus monachus*). The correctness of the determination was quickly confirmed by my opera-glasses. It was interesting to watch them as they climbed about among the branches using their bills as well as their feet. They were noisy and quick and restless in their movements. These birds once were very numerous in Argentina, but have been very cruelly persecuted in recent years, so that their numbers have greatly diminished. The squabs when about ready to fly are esteemed a delicacy, and, as the birds nest in colonies, they are meeting the same fate which has already befallen the beautiful Carolina parrakeet, which once was common in the valley of the Ohio and southward, but which is now extinct. Hudson in describing the nesting-habits of these birds says:

The nests are suspended from the extremities of the branches, to which they are firmly woven. New nests consist of only two chambers, the porch and the nest proper,

and are inhabited by a single pair of birds. Successive nests are added, until some of them come to weigh a quarter of a ton, and contain enough material to fill a large cart. Thorny twigs, firmly interwoven, form the only material, and there is no lining in the breeding-chambers, even in the breeding season. Some old forest-trees have seven or eight of these huge structures suspended from the branches, while the ground underneath is covered with twigs and remains of fallen nests. The entrance to the chamber is generally underneath, or, if at the side, is protected by an overhanging eave to prevent the intrusion of opossums. . . . Repairs are carried on all the year round, but new nests are only added at the approach of spring. Opossums are frequently found in one of the higher chambers when the entrance has been made too high, but, though they take up their abode there, they cannot reach the other chambers, and the parrakeets refuse to go away.

I attempted to get nearer to the flock and cautiously made my way toward the tree upon which they were climbing about, but they did not fancy my approach, though I had no evil purpose in wishing to get nearer to them. No doubt taught by sad experience that men are to be feared, they suddenly with loud cries rose into the air and wheeling in their flight betook themselves to another dead tree, which stood far off in the clearing and to which it would have been vain for me to attempt to follow them across muddy ditches and through thorny tangles. While I was engaged in stalking the parrakeets and chasing insects, the botanist was happy to discover upon the mossy trunks of some half-dead trees colonies of curious epiphytes. He found several orchids, of which he possessed himself, removing them together with the damp bark to which they were adherent. I hope that they lived, and have since then bloomed.

The evening before Dr. Roth had entertained us with an account of the habits of the carpincho (*Hydrochærus capybara*), the huge rodent of these regions, which is still not uncommon in the delta. It is as large as a pig, the biggest rodent now known to exist, though once there were animals (Diprotodon) belonging to the Rodentia as large as oxen. The carpincho is nocturnal in

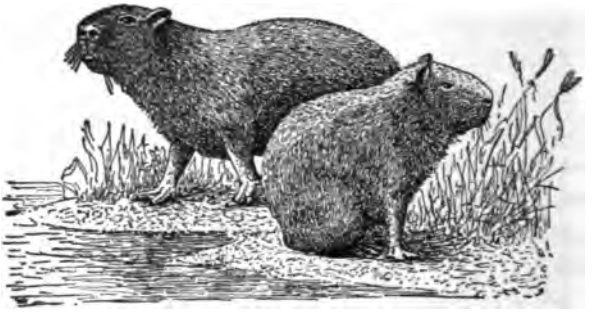

Fig. 13—Carpinchos (*Hydrochærus capybara*). $\frac{1}{15}$ nat. size.

its habits. The good Doctor told us that when engaged in surveying the country he had at one time in his employment a man whose highest delight was to hunt carpinchos at night. He was "carpincho-crazy," and after having worked hard all day, would hurriedly eat his supper, and then sneak off in a rowboat and spend the whole night waiting in the darkness at some likely spot to get a shot at the animals. The flesh is said not to be very palatable, and the hides have comparatively small value, being chiefly used in making the under sides of the native saddles, or straps in harness. "Keep your eyes open for carpinchos," said the Doctor, "you may catch sight of the animals hereabouts." As luck would have it we did not see any of the beasts, but within a hundred yards of the farmhouse we came

upon the tracks and the ordure of a herd, which had evidently been at work in the vegetable patch of our Italian acquaintance during the night.

But the whistle of the steam-yacht blew, a signal that the time for leaving had come. We returned to the landing, and in exchange for the red roses which the pretty black-eyed children of our Italian friend brought us, gave them a box of bon-bons, at sight of which their eyes fairly sparkled. With many an "Adios" we parted company, and the swift little craft swung out into the stream and turning began to head back again through the channels toward Buenos Aires.

The day was still young when we got under way and we were informed that we would have a chance to loiter on our return and that we would make several stops. Our first place of call was a landing where the captain had an acquaintance with whom he wished to speak. His friend was evidently possessed of floricultural tastes. The house stood on piles only about ten feet from the edge of the stream. Back of the house there appeared to be an almost impenetrable growth of jungle, and in the narrow open strip between the water and the house was a curiously commingled growth of all sorts of flowering plants and shrubs. Pansies and mignonette, verbenas and calla-lillies, roses and heliotropes, geraniums, fuchsias, and almond bushes were all blossoming together. On the stumps of two or three half-decayed trees orchids had been fastened and seemed to be thriving. Petunias and sweet alyssum were growing in boxes. The little garden, raised by only a foot or two above the river, the slime of which must often invade the spot, looked bright against the background of the dreary uncultivated waste in which the building is located. The owner was a store-keeper like

the one at whose landing we had tied up during the previous night, and the same array of merchandise which had graced the one place graced the other. Boxes containing Huntley and Palmer's Biscuits, Epps' Cocoa, Lipton's Teas, and Heinz's Tomato Catsup grinned at us like old familiar friends encountered in a strange place. There were cans of petroleum bearing the familiar marks of the Standard Oil Company. Cones of sugar wrapped in blue paper were hanging from the roof over the counter. Bolts of muslin and calico, nails and hatchets, corrugated sheet-iron and ditching-shovels, candy in jars, cigarettes, shoes and sewing-thread, cheap jewelry and stationery, tinware and pottery—all things under the sun—were jumbled together under the shingled roof. It reminded me of similar places which I have found in our own Western country. It was a typical "country-store." Men are the same everywhere, and their wants are the same the world over. Humanity in the swamps of the Paraná is not essentially different from humanity on the banks of the Green River in Utah, or on the banks of the Thames and the Hudson.

Our next stop was made at one of the plantations belonging to Señor Gnecco, a friend of Dr. Roth, who had told him not to fail to call as he passed by and get a basket of oranges. The house is built upon a slight elevation or hummock, sufficiently elevated to insure against its being flooded, except when the waters attain an unusual height. The orange-trees were loaded with golden fruit, quinces, pear-trees, and apple-trees were white with bloom, the orchards resounded with the hum of bees, and butterflies were fluttering here and there among the flowers. While the Doctor, assisted by the attendants of the place, who welcomed him with

cordiality, was getting his oranges, I wandered away among the trees. I was delighted while doing so to come upon a domesticated pair of the Crested Screamer (*Chaunia chavaria*), known by the natives under the vernacular name of *chaja*. This great bird, as large as a swan, is remarkable because of the fact that the wings are each armed with two large spurs, and it is therefore sometimes called the "Spur-winged Goose." It used to be until quite recently very common on the pampas south of Buenos Aires, and, though the flesh is excellent, it was rarely killed by the people of Spanish descent, who, unlike their cousins, the Italians, are not given to the wholesale destruction of birds. The rapid increase of Italian immigration into Argentina bodes ill for the preservation of its splendid avifauna, and the Crested Screamer is doomed to extermination unless it is speedily domesticated, which can easily be done. It lends itself to domestication more readily than most waterfowls, and it ought to be preserved in this way. The bird is one of the most remarkable of the anserine group on account of its singular habits. These have been described by Hudson, and I cannot forbear giving a brief extract from his interesting account. He says:

Fig. 14.—Crested Screamer (*Chaunia chavaria*). $\frac{1}{10}$ nat. size.

The screamer is a very heavy bird, and rises from the ground laboriously, the wings, as in the case of the swan, making a

loud noise. Nevertheless it loves soaring, and will rise in an immense spiral until it wholly disappears from sight in the zenith, even in the brightest weather; and considering its great bulk and dark color, the height it ultimately attains must be very great. On sunny windless days, especially in winter and spring, they often spend hours at a time in these sublime aërial exercises, slowly floating around and around in vast circles and singing at intervals. How so heavy and comparatively short-winged a bird can sustain itself for such long periods in the thin upper air to which it rises has not yet been explained.

The voice is very powerful. When disturbed, or when the nest is approached, both birds utter at intervals a loud alarm-cry, resembling in sound the anger-cry of the peacock but twice as loud. At other times its voice is exercised in a kind of singing performance, in which male and female join and which produces the effect of harmony. The male begins, the female takes up her part, and then with marvelous strength and spirit they pour forth a torrent of strangely-contrasted sounds—some bassoon-like in their depth and volume, some like drumbeats, and others long, clear, and ringing. It is the loudest animal sound of the pampas, and its jubilant martial character strongly affects the mind in that silent melancholy wilderness.

The Screamers, like good Christians, mate for life, and though they at times congregate in great numbers, it has been observed that these flocks are always methodically arranged in pairs. Although the spurs on their wings are formidable weapons, they are peacefully disposed, and it is only the naughty gauchos who now and then teach them degenerate ways and pit them against each other in the ring.

Leaving the orange-groves behind us, we proceeded to a spot where the botanist of the party insisted that he must go ashore to investigate the flora of a bit of primi-

tive woodland. A boat was lowered and we were rowed to the bank. It was no easy task to fight our way through the thorny growths of Eryngium and rough thickets which edged the stream. Getting through these, the ground became more open, and it was possible to find our way among the trees and bushes without much exertion. A few moths, a butterfly or two, and a small snake of a harmless species were the only trophies which fell to the writer during the half-hour on shore. The snake was put into a bag improvised out of a handkerchief, and thus safely brought alive in his pocket to La Plata, where it was put into a jar of alcohol to be sent home to the Carnegie Museum. That was the only snake I saw in Argentina. It was a real snake.

A little farther on we went ashore at another plantation, also belonging to Señor Gnecco. Here the ground in proximity to the landing was in a highly cultivated condition. There were many flowering shrubs and trees and much grass. Butterflies and insects appeared to be common, and I succeeded with the help of Dr. Roth, who also was provided with a net, in making a large catch of diptera, hymenoptera, and small coleoptera, principally obtained by "sweeping" with the nets among the low-growing herbage. By the time we had thoroughly gone over the ground, the sun admonished us that it was time to be again moving. We got under way; at last reached the landing, where our armed escort left us with a polite salute; then we crossed the wide river, pushed on through the canals, and finally arrived at El Tigre in the dusk. We took a train which brought us to the Capital in time for a late dinner. By ten o'clock we were safely back again in La Plata.

The delta of the Paraná represents pampas in the process of formation. The wide level plains of Argentina were no doubt originally laid down by the streams, just as the islands at the head of the estuary are being formed to-day. The evolution of the western cordilleras in recent geologic time has been accompanied by a lifting up of the whole continental mass, more particularly in the west, but there seems no reason to question that the vast pampean region stretching from Paraguay to Patagonia represents the deposition of eroded soil derived from the mountain masses to the east and the west and to some extent to the south of the prairie-lands of the northern and central provinces of Argentina. The winds, it is true, have also played their part, but the chief constructive agency was water.

Here and there in the delta a beginning has already been made in a small way to protect certain of the lesser islands from inundation by throwing up dikes around them. While it would be a very expensive undertaking to construct dikes or levees about all of them, and to install, as has been done in Holland, windmills to pump the water from the land, I have no doubt that in the lapse of years, with the enhancement of land values and the increase of population, this will ultimately be done, and the entire expanse of wonderfully fertile soil will be made to blossom and bear fruit like a veritable Eden. The time for this, however, has not yet come.

The Beach at Mar del Plata.

Lodging House of the Hotel Bristol, Mar del Plata.

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CHAPTER XIV

A TRIP TO MAR DEL PLATA

"The great gray waves with an angry moan,
Rush in on the patient sand.
The spray from their crests is backward blown
By the strong wind from the land.

As curls are blown from a maiden's face
And flutter behind her free,
The spindrift blows from the waves which race
From the stress of the outer sea."—*Laurence Hope.*

"I DO not wish you to leave Argentina without having had an opportunity to see the Pampean beds at some point where you can form a good idea of their structure," said Dr. Roth. "I have therefore arranged that we shall go together to Mar del Plata, where you will see the *barrancas* and have a chance with your own hands to collect some of the characteristic pampean fossils."

Accordingly we went to Buenos Aires and took our places on the night-express, which makes the run of two hundred and fifty miles to Mar del Plata in twelve hours. After placing our luggage in charge of the porter on the sleeping-car, or *dormitorio*, we went forward to the dining-car, or *comedor*. Here a number of the higher officials of the Government of the Province were already seated at table. They were going on a tour of inspection to examine some work be-

ing done for the state. Introductions took place. I found myself in very pleasant and intelligent company for the rest of the evening. Let me in passing observe that I think that those in charge of the service on the dining-cars in the United States might with advantage to themselves and to the traveling public take a few lessons from the officials of the Argentine railways, or from those who control this branch of the service on the "trains de luxe" in Europe, whose methods are strictly imitated in Argentina. Our dining-cars are more commodious than those in Europe, the linen and tableware are generally somewhat better, but the viands are not as well prepared and served. In contrast with the existing crudities in the service of our most famous trains are the delightful and appetizing little luncheons and dinners which are served on the Côte d'Or and Orient expresses in Europe and on the fast trains in Argentina. The dinner served on the evening express between Buenos Aires and Mar del Plata was at all events excellent—in fact surprisingly good.

And now that allusion has been made to the table, its pleasures and its pains, let it be understood that the rank and file of the people in Argentina do not subsist upon such fare as is supplied to first-class passengers on the express trains to Mar del Plata, or the Tucumán Limited. The herdsmen or gauchos on the cattle-ranges, the peons on the great *estancias*, do not possess the means to have, nor do they require, the services of French *chefs*, any more than do the rank and file of the citizens of the United States. In the shacks and shanties of the cattle-herders and the plowmen the cuisine is not always such as would call forth the approval of a connoisseur. There is, however, plenty

in the land. The Argentinos are meat-eaters, like the Britons and like the people of the United States. Meat is abundant and cheap. According to recent statistics there are in the country for every man, woman, and child four beeves, eleven sheep, and one pig, not to speak of poultry. The crops of grain are heavy. In 1878 only enough wheat and corn was produced to supply domestic necessities. To-day Buenos Aires is one of the greatest wheat-markets in the world. Fruits and vegetables can be grown in perfection, but market-gardening, except in the immediate vicinity of the larger municipalities, has not been hitherto pursued so extensively as will no doubt be the case in the future. A great deal of the fruit on sale in the fruit-shops in Buenos Aires at the time I was there had been imported from Italy, Portugal, and Spain. There is no good reason for this. The fare of the laboring classes in the country is simply prepared, and there is more boiling than baking. One of the favorite dishes common in all Spanish-speaking lands is the *puchero*, consisting of boiled meat and vegetables, corresponding to what in New England I have heard called a "boiled dinner." It is not half-bad even from the standpoint of a culinary critic. Beans, *frijoles*, as in Central America, play an important rôle in Argentina, as they do also in Boston. Bread is baked as in southern Europe, and there is always more crust in proportion to the sponge in the loaf than is the case in England or the United States. This is healthy, as it ought to be. Boiled Indian meal, good old-fashioned "mush," or "hasty pudding," is a standard dish. In the matter of drinks the inhabitants of the states of Paraguay, Uruguay, and Argentina are singular in their addiction to the *yerba maté*—or Paraguay-tea. The plant is the *Ilex paraguayensis*, a low

growth indigenous to the tropical forests of the southern half of the continent. The young leaves and terminal buds are collected, and when dried and packed in bales are extensively exported from the regions where the plant is common to the southern parts of the country, where it does not occur. The principal supply is derived from Paraguay, northern Uruguay, and southern Brazil. The primitive method of preparing the infusion is to put a few of the leaves in the bottom of a small gourd, in which the *bombilla* is then placed. In its crudest form the *bombilla* is a reed or thin joint of bamboo, over the lower end of which a few horsehairs have been woven, or a small bit of loose cloth has been tied. In its more advanced and mechanically perfect form it is a tube closed at the lower end except for a number of small perforations. Its latest development, represented in the accompanying cut (Fig. 15), is the product of the art of the silversmith, and consists of a tube, which has at the bottom a spoon-like expansion, covered with a little lid, which is perforated by numerous small openings. The *bombilla* corresponds in its use to the straws which are employed in the act of imbibing mint-juleps and similar drinks. After the *bombilla* has been placed

Fig. 15.—Silver-mounted and carved *maté*-gourd and *bombilla*. ½ nat. size.

in the gourd, a few more leaves of the herb are added with a little sugar, and then water which has been heated almost to the boiling-point is poured into the gourd, and after a few seconds the drink is ready to be drawn up into the mouth through the tube. From time to time as the tea is exhausted more hot water may be supplied, and the process of imbibition goes on. In the rural districts the drinking of *maté* is universal among the creoles. The gourd is passed from hand to hand, and each one who receives it takes a draught from the *bombilla*, which must not be unduly disturbed, as it is thought that the stirring of the mixture impairs its quality. The fear of the deadly microbe has only recently been implanted in the minds of men, and has not as yet thoroughly invaded the remoter districts of South America. To those who possess this wholesome horror the custom of passing the *bombilla* from mouth to mouth does not commend itself. In recent years the preparation of Paraguay-tea for the table to be used in the same way as oriental tea has been undertaken. I purchased a box of the preparation, which is branded as "Mateina," and is put up in an enameled caddy, which has upon its lid a rather gorgeously executed picture of several gentlemen in evening-dress and a number of ladies in décolleté attire seated under the glow of the lamplight about a table holding ordinary teacups in their hands or to their lips. This preparation, which is extensively sold by all grocers in the larger cities, is, according to the information supplied upon the caddy, warranted to be *Hygienico, agradable, y confortante.* The drinking of *maté* does not obtrude itself upon the eye in Buenos Aires and other large cities, where the population is largely of foreign origin, but among the inhabitants of smaller towns

and villages, where the foreign influence is not strong, it is almost universal, and a great deal of time is reported to be wasted in *maté*-drinking, which goes on at all hours. My friend J. B. Hatcher, who spent a number of years in the geological exploration of Patagonia, was accustomed to speak in terms of reprobation of the habit of drinking *maté*, as he had observed it in the course of his travels in the remoter districts. I have tried the drink only on one or two occasions, but did not find it seductive. The infusion is said to be rich in theine, in fact much stronger than the tea of China and Japan. It certainly tastes as if this were the case.

I enjoyed a good rest after having retired to my compartment, but awoke very early, and after dressing went forward to the dining-car, where I obtained my breakfast, and was soon joined by Dr. Roth. The morning was beautifully clear. The train was passing over the pampas. In many places there appeared small ponds and lakelets. About these there were a great many wild ducks of several species. Here and there I caught sight of storks standing in the meadows. The great maguari stork (*Euxenura maguari*) of South America passes the winters in the tropics of Brazil and then migrates southward into Argentina, just as the stork of Europe spends its winters in the tropics of Africa, and migrates northward across the Mediterranean in the spring of the year. The South American stork has not acquired the habit of building its nests upon the roofs of houses, as has its cousin of the Old World. It is a very stately bird, snow-white in color, except for the wings and upper tail-coverts, which are black, and the lores, the legs, and feet, which are red. Their principal food is mice, toads, and snakes. Most of those which I saw did not appear to pay any attention

to the passing train, but two, which were quite near the track, just as we came alongside gave a couple of quick jumps, flapped their wings, and then rose and majestically soared away. I was much interested to see at one place a company of a dozen or more white-faced ibises (*Plegadis guarauna*) wading about among the aquatic grasses at the edge of a lagoon. This bird is said to be quite abundant upon the pampas. Those I saw seemed to be intent upon feeding, and were stalking about, their heads down, probing with their long beaks in the mud. Hudson says of them:

Their flight is singularly graceful; and during migration the flocks are seen to follow each other in rapid succession, each flock being usually composed of from fifty to a hundred individuals, sometimes of a much larger number. It is most interesting to watch them at such times, now soaring high in the air, displaying the deep chestnut hue of their breasts, then descending with a graceful curve toward the earth as if to exhibit the dark metallic green and purple reflexions of their upper plumage. The flock is meanwhile continually changing its form or disposition, as if at the signal of a leader. One moment it spreads out in a long straight line; suddenly the birds scatter in disorder, or throw themselves together like a cloud of starlings; as suddenly they again reform to continue their journey in the figure of a phalanx, half-moon, or triangle. The fanciful notion can scarcely fail to suggest itself to the spectator that these birds go through these unnecessary evolutions intelligently in order to gain a greater proficiency in them by practice, or, perhaps, merely to make a display of their aërial accomplishments. The glossy ibis has another remarkable habit when on the wing. At times the flock appears as if suddenly seized with frenzy of panic, every bird rushing wildly away from its fellows, and descending with a violent zigzag flight; in a few moments the mad fit

leaves them, they rise again, reassemble in the air, and resume their journey.

Everywhere the "Téru-Téru" or spur-winged lapwing (*Belenopterus cayennensis*) was to be seen. This is one of the characteristic birds of the flatlands. It is somewhat larger than the European lapwing, the "Kibitz" of Germany (*Vanellus cristatus*), with which all who have traveled in the low-countries are familiar, and the eggs of which, marketed in London as "plovers' eggs," are esteemed a great delicacy. In its appearance and carriage it closely resembles the European lapwing, but the presence on the shoulder of a spur at once marks it as being a bird, which, like the screamer, has preserved in this organ a trace of relationship to the birds of a former age. The name "Téru-Téru," like the German "Kibitz," is a name bestowed by the natives in imitation of the call. Hudson says: "In size, beauty, and spirit it is a king among the plovers." It is said to be exceedingly tenacious of the spot upon which it has made its breeding-place and range. It there defends itself as well as it can against intrusion and attack, and even when the land is plowed up by the farmer refuses to forsake it. There is a great deal of interesting information about this bird embodied in literature, and many curious tales are told about it by the people of the country who are familiar with its ways. A little while before reaching our destination I was pleased to observe a number of rheas with rapid strides making away over the prairie.

Of mammalian life little was to be seen. A few vizcachas (*Lagostomus trichodactylus*) scuttled away from the side of the track, their brown backs just visible for a moment and the line of their further flight marked

by the waving of the grasses among which they swiftly made off. The vizcacha in its habits is not unlike our woodchuck, or the prairie-dog (*Arctomys*) of our Western plains. It is, however, a much larger animal, approximating a large hare in size. The eyes are lustrous and relatively very large. It has, like our prairie-dogs, the habit of living in colonies, and digs deep burrows in the ground. These burrows when disused are sometimes tenanted by the burrowing-owl (*Speotyto cunicularia*); and I saw a couple of these birds alighting on the prairies as we went along.

Fig. 16.—Vizcacha. $\frac{1}{6}$ nat. size.

We reached Mar del Plata early in the morning. Scores of cabmen and long lines of omnibuses were ranged about the entrance to the railway-station. Dr. Roth selected a Jehu, who drove us to the hotel of his choice, the oldest establishment of its kind in the place, covering a whole block. It is only one story in height. There are a great many inner courts in the middle of which are planted palms and flowers. Surrounding the courts are tiled pavements, from which entrance is given to the rooms, which have tall ceilings and latticed windows. The dining-room is very large, airy, and rather imposingly decorated. There are many other hotels in the place, some of which have been built quite recently, and all have an air of luxury and magnificence which is consonant with the traditions of the locality. Mar del Plata is in fact the Newport of Argentina. A number of years ago a few of the older and wealthier families of Buenos Aires selected

the spot as a pleasant place in which to spend the hot summer months within reach of the sea-breezes. There is a superb beach, though the undertow is said at times to be a little dangerous. The cliffs, or *barrancas*, rise back of the beach to the height of about sixty or seventy feet, and afford pleasant views over the ocean. Here the first families who resorted to the spot built comfortable homes for themselves. It was not long, however, before their example became contagious, and all the world came to regard it as "the correct thing" to possess a villa at Mar del Plata. The front of the cliffs is protected by a low stone wall, back of which is a wide pavement for pedestrians, and alongside of it a broad driveway, which is well-paved and which is at the present time being greatly extended toward the north. This is known as the "Rambla," and it was to inspect the manner in which its construction was being carried out by the contractors that my friends, the Minister of Public Works and the Treasurer of the Province, had come down upon the train.

Having settled in our room at the hotel, Dr. Roth disappeared and presently returned with a stout boy bearing a big basket. The boy had been hired to act as our porter, and the basket was to be used as a receptacle for the fossils we might collect. Armed with our picks and attended by the lad we left the hotel and went to the beach. Our walk led us past the bathing-houses, of which there are many just at the foot of the cliffs, raised on high piles above the level of the flood-tide. It was the time of ebb, and the beach was exposed for miles to the north. There was a fine swell on the sea, and the rollers were coming in grandly and breaking upon the sand, their foaming crests being cut off by the stiff breeze which was blow-

ing from off shore. We walked a short distance beyond the bath-houses, and then began a minute and careful examination of the surface of the *barrancas*, which gave evidence of having been deeply worn and cut by the waves during the past winter. The exposures of the strata at this point represent the Upper and Middle Pampean beds, as they have been called by Roth. The Upper beds are light in color, having a yellowish gray tint of varying shades of intensity; the Middle beds are dark chocolate-brown. The Lower Pampean beds, which are said to be red, are not exposed to view at Mar del Plata, and Dr. Roth told me that to see them it would be necessary to take a journey some twenty-five miles to the south, for which unfortunately we did not have the time. The material of which the Pampean beds are composed is known by geologists as *loess*. Loess is fine alluvium, which gives little evidence of horizontal stratification, and which is therefore regarded by most authorities as having been to a very considerable extent deposited by aërial agencies. The fine dust originally brought down by the streams was distributed by the winds, and the plants growing over the region held the mass in place, and as the deposit grew thicker, continued to hold it. Loess is everywhere characterized by the presence of perforations more or less perpendicular, these holes marking the place of grass-roots and the stems of plants which long ago died and vanished, leaving their molds in the fine material. Into the openings thus left after a while limy and silicious deposits were often carried by the water as the rains percolated through the soil. At Mar del Plata the loess is everywhere full of limy concretions, to which the people of Argentina have given the name of *tosca*. When these concretions occur in the soil of

the pampas the *estancieros* are in the habit of saying that the land is not good, and it is said in praise of a tract offered for sale that it is *sin tosca*, free from concretionary beds. To some extent this lime is no doubt due in its origin to the solution and redeposition of particles of the fine alluvium derived from the erosion of limestone rocks; to some extent it is also no doubt due to the gradual solution and redeposition of the lime from shells, bones, and other organic remains, which were left upon the surface as generation after generation of living things laid down and died. In Switzerland the small concretions in the loess are known by the peasants as "Löess-kindl"—loess-babies—because of their curious forms, sometimes suggesting those of human beings. In the Mississippi Valley in places there are considerable deposits of loess, and the concretions found in them are often spoken of as "fossil potatoes" because of their resemblance to the tubers. The pampas are overlaid by loess, and, except along some of the great rivers of China, there is no such extensive deposit of loess anywhere else in the world. The thickness of the loess in Argentina is very remarkable. It varies of course, but Dr. Roth tells me borings show that in some places it is many hundreds of feet in depth. The time necessary for the slow deposition of such beds by eolian agencies must have been very great. Dr. Roth is of the opinion that all periods of the Tertiary may be represented in these beds from the Eocene up to the latest Pleistocene, and in fact that they have been in process of formation in South America from the dawn of mammalian life to the present time. I am not prepared to either affirm or deny this view. The observations made in a day or two do not suffice to enable any man to reach conclusions upon such a

subject. There was nothing, however, in the Upper and Middle Pampean as displayed in cross-sections at Mar del Plata which would lead me to think of the deposits as possessing the relatively great antiquity which would be implied in the reference of these beds to the Eocene, or even to the Miocene. I saw nothing which would incline me to believe these beds to be of earlier age than the Pleistocene, or possibly the late Pliocene.

After having taken a look at the formation, as it first presented itself to view, we set about searching for fossils. The Doctor presently called to me, and pointed out one of the scutes, or thick bony plates, which had once been a part of the armor of a Glyptodon, which was embedded in the matrix. It only took a minute to secure the specimen. Presently we found a place where some ribs of a Megatherium were protruding from the surface of the cliff. We dug these out. Then we found some fragmentary remains of a Mylodon. The lower jaw of a small rodent, beautifully preserved, was the next discovery. A little farther on I found a well-preserved shoulder-blade of Paleolama, an animal which was related to the guanaco. While I was finishing the task of cutting this bone out of the matrix, my companion called to me excitedly and beckoned me to come to him. When I arrived at the spot he pointed to a piece of what evidently was a potsherd projecting from the dark chocolate-colored mass of the matrix in which it was imbedded. "This is worth all the cost of this excursion!" he said. "I have not touched the thing. Look at it attentively. Tell me, has that thing become recently imbedded where it is, or is it where it has been for ages, until the waves ate their way into its resting-place?" I knelt down and critically examined

the object. "I am able unqualifiedly to affirm that this piece of pottery, for such it appears to me to be, is imbedded in the matrix, and has not been disturbed by the hands of man." "Good!" replied my companion, "I am glad to have had you with me, and to have had

Fig. 17—*Mylodon robustus* Owen. $\frac{1}{17}$ nat. size. (After Owen.)

you see the thing *in situ*. Years ago I was digging up the bones of a Scelidotherium, and, as I was doing so, I came upon a flint arrowhead buried in the soil alongside of the bones. I took the flint with the bones to Burmeister, who was then the Director of the Museum at Buenos Aires, and under whom I was working. I

explained to him how and where I had found the things. He was quite incredulous, and maintained that in some way or other I had fallen into error. What became of the flint I do not know. It has disappeared, and although I have had a careful search made in the Museum and have endeavored in every way to trace it, it cannot now be found. Several times before, in this very neighborhood, I have found bits of pottery imbedded in the Middle Pampean beds. People are incredulous. They do not absolutely contradict, but they shake their heads. Now you are with me, a witness to the fact that this bit of a human artefact is a part of the soil from which we have been digging up to-day the remains of these extinct old animals. Take it up carefully. Take it to the Carnegie Museum. Preserve it, as a proof that at the time when the strange Pampean fauna existed in this land, man also existed here." I took my pick and beginning far back I endeavored to cut out a block of the loess with the potsherd still embedded in it, as we had found it. I had cut away on the four sides until it seemed to me that I might now venture to under-cut and bring the block away, but just as I was at the end of my task, the friable material yielded, and broke, and unfortunately the potsherd fell out of its place, the main crack having run through the spot where it was lodged. I saved the pieces and the sherd, anathematizing my misfortune in not having had with me a solution of shellac with which to have first soaked the mass, so that it would not have fallen apart. But the fact is incontestable that the piece of baked clay, evidently a bit of a broken earthen vessel, was found undisturbed in the lower part of the Middle Pampean, only a short distance from places where we had found the remains of Mylodon and Megatherium.

The reader may wonder why I go thus minutely into these details. But if he will reflect for a moment he will realize what great interest attaches to such a discovery. The presence of this bit of pottery in this deposit can lead to only one or the other of two conclusions, either that these beds are comparatively modern from the standpoint of the geologist, or that man must have existed at a very remote period in South America. If the beds are modern then the great ground-sloths, and their huge armadillo-like contemporaries, have only recently become extinct, and must have been coeval with man as was the mammoth in Europe. If the beds are not modern, but ancient, then the antiquity of the human race is carried far back into the past. That bit of a broken pot found embedded in the loess thirty feet below the surface of the soil as it is to-day, has a story to tell, and awakens a whole world of inquiries. For my part I believe that the Middle Pampean is a Pleistocene formation, from a geological standpoint comparatively modern, possibly laid down not more than fifty thousand years ago, and that man was the contemporary of many of the strange animals which tenanted South America at that time.

Until noon we wandered along the *barrancas*, here and there finding bits of bone, each having a story to tell of the life of the past. At last we concluded that the time had come for us to return to the hotel and get our luncheon. No matter how interesting fossil bones may be, there come moments in the experience of the most ardent paleontologist when he feels that he would prefer bones with a little muscular tissue and fat still adherent to them. After luncheon my companion, according to the custom of the country, indulged in a siesta. Not being accustomed to taking a nap after

my midday meal, I told him that I would return to the beach and that he would find me there later. I amused myself by collecting insects, which I found abundant along the beach under piles of half-dried seaweed, among them one or two beautiful carabid beetles, over which since my return one of my assistants has gloated,

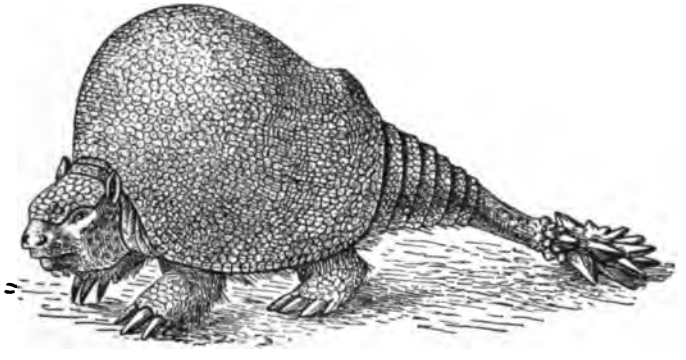

Fig. 18.—*Dœdicurus clavicaudatus* Owen. $\frac{1}{6}$ nat. size.

because they represent a species hitherto unknown to him, and said to be still very rare in collections. I beguiled myself with making one or two water-color sketches, and then, being rejoined by Dr. Roth, we pushed up along the cliffs to points which we had not examined during our rambles in the forenoon. We were again repaid by finding a number of fossils, among them part of an antler of an extinct deer, which I had a great deal of trouble in cutting out of the matrix, which was almost as hard as rock. Bits of the cuirass of Glyptodon and of Dœdicurus were found, together with one of the spike-like bony plates with which the end of the tail of the latter enormous animal was armed. The Dœdicurus had a body as large as that of an ox. He belonged, like the Glyptodon, to that great group of animals, now

mostly extinct, which is represented in part by the armadillos of the present day. The great bony carapaces of Glyptodon, Dœdicurus, and their allies are not altogether uncommon in the Pampean beds, and my friend Hatcher used to tell how at the house of a gaucho, with whom he once stayed overnight, one of these fossils had been utilized as a bathtub, in which Hatcher himself had the pleasure of "taking a swim." Talk about luxury!

Our long walk had taken us far from Mar del Plata, and, as the tide had turned, and the sea was rolling in upon the beach, we climbed up to the top of the cliffs and walked home in the sunset. Below us, where a few hours before we had strolled along upon the sand, great breakers were casting up their foam along the foot of the cliffs, with a roar which was majestic. As the night was falling, we reached the hotel, very tired and a little footsore; and were glad to bathe and dine in comfort. At half-past nine we again boarded the train for Buenos Aires, and on the following morning arrived in safety at La Plata.

My inspection of the fossil-bearing strata heightened the interest with which day after day I had been regarding the noble collection of extinct animals in the Museum. The former mammalian fauna of South America, especially that portion of it represented in the early Tertiary formations, is very remarkable, and during the past three quarters of a century has become the subject of ever deepening interest to paleontologists. It is so entirely unlike that which occurs in other parts of the world as to prove beyond doubt that it represents an evolution which must have taken place in geographical isolation from all other regions, except possibly the ancient Antarctic continent, through which

there may have been a connection with Australia. The fact that fossil marsupial animals are very numerous in these early strata, and further the fact that there are still comparatively numerous marsupial animals living in South America, supports the view that South America may in the distant past have been in some way connected with the Australian regions, which are, as everybody knows, the present metropolis of the marsupials. There may also have been a time, when, for a longer or shorter period, the southern extremity of Africa was also linked to that old Antarctic continent. The fact that certain families of shells, insects, fishes, birds, and mammals occur in regions now separated from each other by wide seas, is regarded by students as showing the probability that these regions were once more closely connected with each other than they now are. A multitude of facts in the geographical distribution of living things, which it would require a volume to recite, tends to confirm the opinion, now almost universally accepted by naturalists, that the land-masses about the South Pole once had a much greater northward extension than is the case to-day, and that Australia and the southern extremities of South America and of Africa may have been connected at times with Antarctica, and thus with each other. At the times when these parts of the earth were being populated by living things, these regions were completely isolated from the lands in the northern hemisphere. The great land-mass forming Europe and Asia (the Eurasian continent) was at different times connected with North America. There is every reason to believe that North America and eastern Asia were once united with each other by a land-bridge, which was located in the region of Bering Sea, and that animals freely migrated from

North America into Asia and from Asia into North America. While this was going on the two Americas had no connection with each other at all. Subsequently, however, a connection between North and South America was established. This union of the two western continents appears to have taken place long after a connection between South America and the Antarctic continent had ceased to exist. When North and South America became united there took place an invasion of South America by animals from North America and a return wave of emigration from South America into North America swept upward. From North America there passed into South America the camel-like animals, which had come into being on the plains of what are now the regions of the Rocky Mountains. The peccaries, the deer, the cats, the tapirs, emigrated from North America, as did also the mastodon, the latter animal representing an invasion from far-away Asia by way of the Bering Sea land-bridge. From South America there traveled northward the ground-sloths, the opossums, the armadillos, the toxodonts, and other creatures which had their origin upon South American soil. These reciprocal movements probably did not take place much before the close of the Pliocene, and during the early Pleistocene. In caves in Pennsylvania we have quite recently found the remains of a number of animals, the nearest relatives of which occur in the Pampean beds of Argentina.

Certain of the friends of the writer have rather strenuously advocated the view that the continent of South America was at one time linked to the continent of Africa by a land-bridge which reached across the Atlantic Ocean from eastern and northern Brazil to the nearest point of the African continent. This view

has been controverted, and while the existence of such a land connection might account for certain facts in the distribution of animals, and more particularly of the fishes of the two continents, the writer is very skeptical, and is more inclined to believe that the occurrence of related genera and species in Africa and South America will prove ultimately to have arisen through the land connection effected by union with the Antarctic continent, of which mention has been made.

Sir Richard Owen was one of the first to name and describe some of the more striking fossil mammals the remains of which have been recovered in the Pampean beds. The material obtained by Darwin on his famous voyage in H. M. S. *Beagle* was submitted to Owen for study. Since that time a multitude of very able men have devoted a great deal of time to a careful examination of the fossil fauna of South America, and thus our knowledge has been greatly enlarged. Dr. Burmeister, who was the Director of the Museum in Buenos Aires for many years, accomplished much. A number of years ago Señor Florentino Ameghino, and his brother, Carlos Ameghino, began diligently to collect fossil remains which they encountered in various parts of Argentina, and more particularly in Patagonia. Florentino Ameghino began to describe them, and subsequently gave to the world descriptions of an enormous number of new genera and species, attributing to the strata in which they were found various geological ages, in such a manner as to provoke the astonishment of students in other parts of the world. Princeton University was enabled through the generosity of certain friends to send several expeditions to South America. Two of these were conducted by Mr. John Bell Hatcher. Other expeditions by other institutions

have gone out, and numerous eminent paleontologists have personally visited the region. Meanwhile those upon the ground have continued to explore it. The result has been a great access of information which tends to prove that Ameghino was not always quite correct in his interpretations, though he deserves the

Fig. 19.—*Macrauchenia patachonica* Owen. $\frac{1}{18}$ nat. size.

very highest praise for his diligence and for many noble discoveries. I had the great pleasure while in La Plata of visiting Señor Carlos Ameghino, who survives his brother, and of seeing the collections which have been accumulated and which contain many of the types of the species described by Florentino Ameghino. While of the highest scientific interest, this assemblage of material does not contain nearly as many finely preserved specimens of the fossils of the pampas as are found in the National Museum at La Plata, or in the Museum in Buenos Aires, where are the collections

brought together during the time in which those eminent scholars, Dr. Burmeister and Dr. Carlos Berg, were the directors of that museum. The mounted skeletons of the great armadillo-like mammals of the Pampean beds, of the huge ground-sloths, of Toxodon, Macrauchenia, and other beasts, which once inhabited

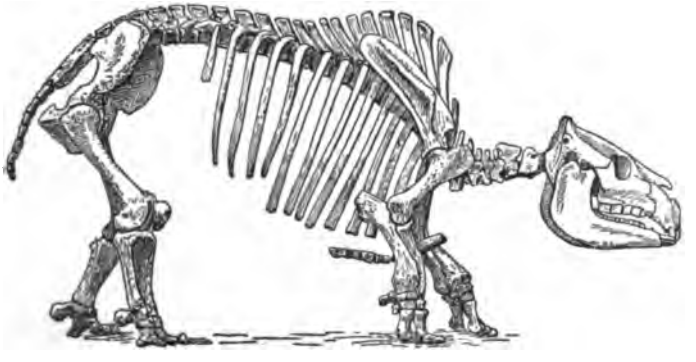

Fig. 20.—Skeleton of *Toxodon burmeisteri* Giebel. $\frac{1}{50}$ nat. size.

Argentina, constitute a very imposing display as they are exhibited in the halls at La Plata. One of the most interesting of these creatures was the Macrauchenia, an animal which combined in itself many curious anatomical features, not to say inconsistencies. I was particularly interested in examining the collection of the remains of various species of Toxodon. On the outward voyage a young American man of science, who is in the employment of the Brazilian government, came on board at Bahia, being on his way to Rio de Janeiro. We struck up an acquaintance, and he reported to me that he had found in the interior of the Province of Bahia a large quantity of the fossil remains of a number of extinct animals. They had been dug up at a water-hole, which was being cleaned out by workmen, and he

told me he had some of them with him on board. They were produced by him, and very kindly presented by him to me. Since then he has forwarded to the Carnegie Museum a large assemblage of the remains obtained at the same locality. Among the things put into my hands on shipboard was a fragment of the tusk of a mastodon, the tooth of a fossil horse, and the tooth of a Toxodon. Availing myself of the courteous assistance of Dr. Roth a comparison of the latter specimen was made with the abundant material in the Museum at La Plata, with the result that we came to the conclusion that the tooth belongs to *Toxodon burmeisteri*, the giant of the family. The late Professor E. D. Cope founded a species of Toxodon upon a single tooth coming from the Province of Bahia, the only case in which such animals have hitherto been reported from that part of the continent, but I have no hesitation in saying that the specimen presented to me by Mr. G. A. Waring represents the species I have mentioned. The range of this huge animal is thus extended far to the north. Remains of Toxodon have been reported from Central America, but thus far no record of their occurrence upon the soil of the United States has been made, and save for the case cited by Cope there has been no prior account of their occurrence in northern Brazil.

From the authorities of the Museum in La Plata I received replicas of many of the fine specimens contained in their Museum as a gift for the Carnegie Institute. I also received a piece of the skin, some hair, and some of the ordure of Grypotherium obtained at Last Hope Inlet. "Thereby hangs a tale," which I will proceed to unfold in the next chapter. For these acts of great kindness on the part of the Faculty of the Museum in La Plata, I desire here to renew my thanks.

Hauling Wheat to the Market in Big Two-Wheeled Carts. Seven Horses Harnessed Abreast.

The Grain-Elevators at Buenos Aires.

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CHAPTER XV

A MYSTERIOUS BEAST

"Then Brown he read a paper, and he reconstructed there,
From those same bones an animal, that was extremely rare."
Bret Harte.

FOR many years it had been rumored in Argentina that there existed in the unexplored wilds a strange animal, to which the Indians gave the name of *Yemisch.* It was said to haunt the margins of streams, to have webbed feet, a long tail, and to be endowed with incredible ferocity. It was reported to attack men and cattle when they were crossing streams. It had, so it was affirmed, the habit of eviscerating its prey, and the narrators told how after the fearful act the entrails of its victims might be seen rising from the bloody water and floating on the surface. Certain spots were pointed out as being dangerous, because the brute was said to have its lair in their neighborhood, and these places were shunned by the natives. Nobody could be found who had ever seen it, but many averred that they had heard of it from those who had seen it. The eye-witnesses of its atrocities were Indians, or deceased wives' uncles, or maternal grandparents—"the dear departed." Nobody had ever succeeded in running the beast to cover, or in the spirit of a modern Hercules slain it in combat; but by camp fires, at the meetings of sportsmen in their clubs, and in the homes of the

guachos, as they sat and guzzled *maté*, or smoked the weed, men talked about the Yemisch.

In the month of January, 1895, a party of gentlemen who were taking an outing near Consuelo Cove on Last Hope Inlet discovered a cave about six kilometers distant from Consuelo. In a little mound near the entrance they found a remarkable piece of skin. It was between four and five feet long and about three feet wide. The skin of the head and legs of the animal had apparently been trimmed off. The hide in places was over half an inch thick. Its outer surface was covered more or less densely with coarse yellowish brown hairs, varying in length from an inch and a half to three inches. On the inner side were multitudes of little ossicles, or bonelets, firmly imbedded in the tissue. These bonelets had the size and shape of small white beans, some being larger, others smaller. The excursionists took the skin away with them, but though a number of pieces were cut off from it, and became scattered among different members of the party, the greater portion remained in the possession of Captain Eberhard, the owner of an estate in the vicinity, who had been the leader of the company. The next year Dr. Otto Nordenskjöld, the commander of a Swedish expedition, which had gone out for the purpose of making a scientific exploration of the regions about the Straits of Magellan, visited the cave, and he too found a piece of the same kind of skin, some bones, and tufts of hair, which he took home with him to Stockholm. These things were subsequently described and figured by Dr. Lönnberg in the second volume of the report which was published by the Swedish Expedition. In November, 1897, Dr. F. P. Moreno, the Director of the Museum in La Plata, Dr. Racowitza, the Zoölogist of

the Expedition which had come out in the S.S. *Belgica*, Señor Don Luis A. Alvarez, an engineer, and Dr. Rodolfo Hauthal, the Curator of the Section of Geology in the Museum in La Plata, visited the region, and Dr. Moreno succeeded in obtaining from Captain Eberhard the large piece of the hide, which the latter

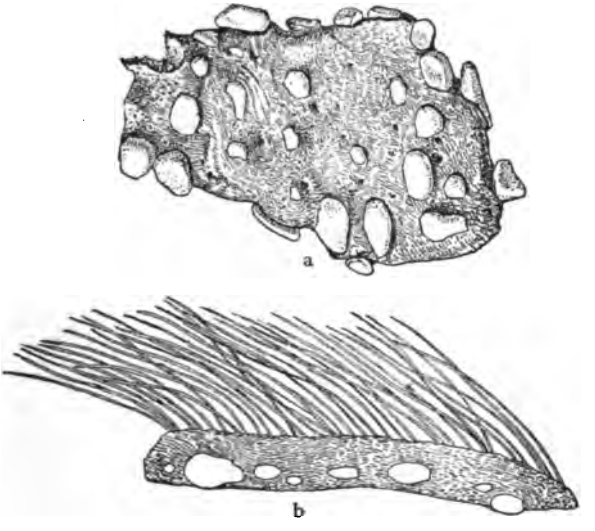

Fig. 21—Skin of *Grypotherium domesticum* Roth. *a*, Under side of skin from a fragment in the Carnegie Museum. *b*, Section of skin showing ossicles and outer hairs. ½ nat. size. (After Arthur Smith Woodward.)

still retained in his possession. This specimen together with other remains, evidently belonging to the same species, was taken by Dr. Moreno to London, and by him presented to the British Museum. In the year 1899 these things were made the subject of an address delivered by Dr. Moreno before the Zoölogical Society of London, which in their *Proceedings* for that year

published a fully illustrated account of the various objects thus far found in the cave, the paper having been prepared by Dr. Arthur Smith Woodward in collaboration with Dr. Moreno. Dr. Woodward referred the specimens to the genus *Grypotherium*, originally set up by Reinhardt in 1879 in the twelfth volume of the *Proceedings of the Royal Danish Academy of Sciences*, for the reception of some fragments, which had been discovered in another locality. The relationship of Grypotherium to Mylodon and the other long extinct gravigrade edentates of South America was pointed out and explained.

But before the appearance of Dr. Woodward's scholarly paper, the reading public not only of Argentina but of the entire world had been regaled with a series of sensational accounts, affirming that in the remote regions of Argentina or southern Chili there still existed a surviving representative of the family of the ground-sloths, of which the colossal Megatherium is the species best known to the public. The animal said to be roaming in the wilds was identified with the Yemisch, of which everybody in Argentina had heard at some time or other. The authority for these tales was none other than Señor Florentino Ameghino. He set the ball rolling by privately printing and circulating a paper under date of August 2, 1898, entitled "*Première Notice sur le Neomylodon listai, un Représentant vivant des anciens Edentés Gravigrades fossiles de l'Argentina.*" In November of the same year this article appeared in the form of an English translation, which was published in *Natural Science*, volume xiii., pp. 324–326. In this paper Ameghino recounts that a deceased friend of his, the late Ramon Lista, had once told him that he had come across an animal, which he had failed to get,

though he had shot at it a couple of times, which resembled a pangolin, except that instead of being covered with scales it was covered with hair. Lista had expressed the opinion that, "if not a pangolin, it was certainly an edentate nearly allied to it." Ameghino then went on to say:

In spite of the authority of Lista, who, besides being a learned traveler, was also a skillful observer, I have always considered that he was mistaken, the victim of an illusion. Still, although I have several times tried to find out what animal might have given him the illusion of the pangolin, I was never able to guess.

It was not an illusion. Although extremely rare and almost extinct, the mysterious animal exists, with the sole difference, that instead of being a pangolin, it is the last representative of a group which was believed to be quite extinct, a gravigrade edentate related to *Mylodon* and *Pseudolestodon*.

. . . . . .

Lately, several little ossicles have been brought to me from Southern Patagonia, and I have been asked to what animal they could belong. What was my surprise on seeing in my hand these ossicles in a fresh state, and, notwithstanding that, absolutely similar to the fossil dermal ossicles of the genus *Mylodon*, except only that they are of smaller size, varying from nine to thirteen or fourteen millimeters across. I have carefully studied these little bones from every point of view without being able to discern any essential difference from those found in a fossil state.

These ossicles were taken from a skin, which was unfortunately incomplete, and without any trace of the extremities. The skin, which was found on the surface of the ground, and showed signs of being exposed for several months to the action of the air, is in part discolored. It has a thickness of about two centimeters, and is so tough

that it is necessary to employ an axe or a saw in order to cut it. The thickest part of the skin is filled by the little ossicles referred to, pressed one against the other, presenting on the inner surface of the skin an arrangement similar to the pavement of a street. The exterior surface shows a continuous epidermis, not scaly, covered with coarse hair, hard and stiff, having a length of four to five centimeters and a reddish tint turning toward gray.

The skin indeed belongs to the pangolin which Lista saw living. This unfortunate traveler lost his life, like Crévaux, in his attempt to explore the Pilcomayo, and until the present time he is the only civilized person who has seen the mysterious edentate of Southern Patagonia alive; and to attach his name appropriately to the discovery, I call this surviving representative of the family Mylodontidæ *Neomylodon listai.*

Now that there are certain proofs of its existence, we hope that the hunt for it will not be delayed, and that before long we may be able to present to the scientific world a detailed description of this last representative of a group which has of old played a preponderating part in the terrestrial faunas which have succeeded each other on South American soil.

Ameghino followed his account of *Neomylodon listai*, which he had printed and widely distributed in Europe and the United States among scientific men and periodicals, by an article which appeared in *La Pirámide* of Buenos Aires, under date of June 15, 1899, under the title *Un sobriviviente actual de los Megaterios de la antigua Pampa.* Among other things he says:

Recently my brother, Carlos Ameghino, who for the past twelve years has been making collections and carrying on geological investigations in the Patagonian regions, succeeded in somewhat lifting the veil of darkness, which until

the present has shadowed the existence of this mysterious being.

About the middle of last year he sent me from Santa Cruz some remains accompanied by the following lines: 'I have succeeded at last in obtaining from the Tehuelche Indians some valuable data in regard to the famous Yemisch, which is not a myth or creation of the fancy, as we have believed, but which really exists. I have seen in the possession of an Indian a piece of the skin of the Yemisch, in which were imbedded the little ossicles, which I send you, just like those which we find in a fossil state with the skeletons of Mylodonts. Hompen, another Tehuelche Indian, has informed me that when coming from Senguer to Santa Cruz he encountered a Yemisch, which blocked his path, and with which he had a fight, succeeding in killing him by blows. According to these people the creature is amphibious, and can walk on land as well as it swims in the water. It is confined in its range to-day to the central parts of Patagonia, living in caves and sheltered retreats on the banks of lakes Colhué, Fontana, and Buenos Aires, and of the Senguer, Aysen, and Huemules rivers; but according to tradition it ranged in former times as far as the Rio Negro in the north, and far south, so the older Indians say, to all of the lakes on the eastern slope of the Andes, and even to the Straits of Magellan. It happened about the middle of this century that a Yemisch which was coming down from the lakes of the Andes to the Santa Cruz River came on shore on the north bank of this stream in the neighborhood of Pavon Island; the Indians fled in terror into the back country, and ever since then, in memory of the unlooked for apparition, have given the spot which they abandoned the name of Yemisch-Aiken (the place, or haunt, of the Yemisch). It is nocturnal in its habits, and is said to be so strong that it will seize horses and drag them down into deep water. According to the description given me it has a short head, with great canine teeth, and small ears, short, flat (plantigrade) feet, with three toes on the front

feet, and four on the hind feet, joined by a web fitting them for swimming, while at the same time they are armed with formidable claws. The body is covered with short, harsh, and stiff hair, uniformly bay in color. In size, I am told, the animal is larger than the puma, with shorter legs, and a much thicker body.

The result of these publications by Ameghino was amusing. The minds of the curious were inflamed. The reputed existence in life of a relative of the extinct Megatherium naturally attracted wide attention. To find such an animal in Patagonia seemed as remarkable as it might have been to have found a living mammoth straying about in Alaska or the Lena Delta in Siberia.

The subject was "nuts" for the reporters of the newspapers in Buenos Aires. These gentlemen are quite as wide-awake and active as their brethren in New York and London. Hardly a day passed without reference to the theme. The fact that "our distinguished fellow-citizen, the eminent scientist," etc., had declared for the actual existence of the beast was enough in the minds of the scribes to put the whole question beyond controversy. With screaming headlines it was from time to time announced that various persons had found and followed the tracks of the "mammifero misterioso," but unfortunately without reaching its lair. Among those reported in the papers as having trailed the Yemisch was Lord Cavendish, who was taking an outing in Patagonia, and his adventures were retailed with particularity, although the gentleman afterwards was greatly amazed upon his return to civilization to discover what had been written and printed about occurrences of which he had no knowledge or recollection. The excitement was not confined to Argentina. Hardly a newspaper, or scientific journal in the world, failed

to devote at least a paragraph to the remarkable discovery. In a lecture before the Zoölogical Society Dr. (now Sir) Edwin Ray Lankester said, "It is quite possible that the Mylodon still exists in some of the mountainous regions of Patagonia." Thereupon Mr. Pearson, the proprietor of the *Daily Express* of London, promptly provided the necessary funds for equipping an expedition to go and search for the beast, and Mr. Hesketh Prichard was sent out to find it. The result was a beautifully-illustrated work upon Patagonia by Mr. Prichard, but no Mylodon, no Yemisch was returned to the London Zoo.

Meanwhile the little group of hard-headed scientific men at the Museum in La Plata and their correspondents elsewhere took the matter in hand and addressed in public some very embarrassing questions to Señor Ameghino, whose enthusiasm appeared to them to have rather gotten the better of his judgment. The paleontological teapot began to simmer and then to boil. It was a good deal like the "row," which broke up the "camp on the Stanislaw," though there was no "heaving of rocks." Dr. Rodolfo Hauthal went back to Consuelo Cove and made a careful reëxamination of the cave. His published report, which appeared in the *Revista* of the Museum in La Plata, is most interesting and illuminating. He shows that the cave had no doubt at one time been used as a human habitation, and that its occupants, if they had not domesticated the great and thoroughly inoffensive ground-sloth, had at least held it in captivity. He found that part of the cave had been used as a stable for the brutes, and that in one place there was a deposit of the dried dung of the animals about four feet in depth, showing that the spot must have been used for a long time. He found a

stack of hay which had been employed as fodder. He found more pieces of the strange skin and numerous bones. The skulls of the specimens, which he and others before him had found, showed that the animals had been killed by knocking them on the head by a weapon, possibly a stone ax. He found various artefacts representing a primitive race of men. Dr. Santiago Roth described the material brought back by Hauthal and others, and gave the animal the name of *Grypotherium domesticum*, holding that the specific name *listai*, applied by Ameghino, related not to the remains discovered at Last Hope Inlet, but to an imaginary creature. It was pointed out by several critics, among them Professor J. B. Hatcher, that in truth the type of Ameghino's *Neomylodon listai*, if type it could be called, was a lot of hearsay, a rumor, a tale told by an Indian. Florentino Ameghino had in fact heard in some way a report of the finding of the skin at Last Hope Inlet. The story had passed from mouth to mouth, though nothing had as yet been printed about the matter. A few of the bonelets had also probably been passed from hand to hand as "curios." They had fallen apparently into the possession of Carlos Ameghino, who sent them to his brother. Without any more definite knowledge than he had thus acquired Ameghino rushed into print with his new generic and specific names. There are men who

Fig 22.—Dried ordure of *Grypotherium domesticum* Roth. Specimens in Carnegie Museum. ½ nat. size.

are affected by a fondness for claiming the first place as the disseminators of scientific information, and there is a weakness now and then manifested by systematists which induces them to attach their names to new genera and species upon slight provocation. I had a friend in the ranks of my entomological correspondents a number of years ago who was thus afflicted. On one occasion it happened that I named and described a new and very beautiful butterfly from Mexico, and when my friend came across the description he turned to a mutual acquaintance and said: "Thunder! If I had only imagined that there existed such a thing, I should have gone to work at once and named it and published a description of it, even without seeing it, rather than have let Holland have the credit of doing so." It is an odd thing that in the calm realms of science the play of human passions should sometimes thus reveal itself. Dr. R. Lehmann-Nitsche from the standpoint of an anthropologist and student of folk-lore came forward and punctured the myth of the so-called Yemisch, showing that the big otter of South America (*Lutra felina*) and the jaguar had been brought together and made to render joint service in the fabrication of a monster as real as some of the beasts of ancient mythology. The jaguar, "El jaguar del agua" as the animal was called by the Indians, because it has the habit of frequenting the pools where the animals it preys upon come down to drink, was the creature to which most of the tales told by the Indians referred, and Carlos Ameghino had been unfortunate in linking their legends relating to the great cat with the harmless edentate, which was a vegetarian, and had been fed upon hay. It was quite a "merry war," while it lasted. The literature provoked by the discussion is printed in

six or seven languages, and would fill a large volume, if brought together.

Out of the affair came a better knowledge of Patagonian lands and the perception of the fact that the fauna of the Pampean beds had survived to some extent to quite recent times; at all events that one of the near relatives of the Megatherium and the Mylodon had at some remote period, perhaps within the Christian era, been held in captivity, kept in corrals, fed with hay, and used for food. In the case of the writer the most interesting result was the acquisition for the Carnegie Museum of a piece of the hide from the cave at Last Hope Inlet, together with a lot of the hair and the dried ordure of the "Mysterious Beast."

National Observatory, La Plata.

(The author's home during his stay in the country.)

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CHAPTER XVI

LIFE IN LA PLATA

"I do not own an inch of land,
But all I see is mine,—
The orchard and the mowing-fields
The lawns and gardens fine.
The winds my tax-collectors are
They bring me tithes divine,—
Wild scents and subtle essences,
A tribute rare and free
And more magnificent than all,
My window keeps for me
A glimpse of blue immensity,—
A little strip of sea."—*Lucy Larcom.*

THE greater part of the time which we spent in La Plata was necessarily devoted to our tasks in the Museum. But there were a number of holidays and holy days when our labors were interrupted. As in all Latin lands the calendar of the Church is observed. Interruptions due to this cause and the comparatively short hours at the Museum gave opportunity now and then to take long walks. The extreme flatness of the region did not at first glance hold out promise of entertainment, but there are other things besides hills and mountains which lend interest to a stroll in the country. Flat lands are not without their attractive features. Some of the most delightful pedestrian excursions I have ever made were along the dikes and ditches of Holland. When I was a lad and lived for a few months in In-

diana, although I missed the mountains and the hills, among which I had passed my earlier years, I nevertheless derived great pleasure from rambling through the fields. So it was also here in this flattest of all flat lands, the Province of Buenos Aires. The sky in level countries, as boundless as that which lifts its vault over the ocean, possesses a charm which partly compensates for the lack of variety due to the absence of broken or rugged surfaces. Though so broad, the sky over prairie-lands always seems to possess a different quality from the sky above the sea, whether because of reflections from the surface or the presence of minute particles of dust in the lower regions of the air. This difference is noticeable at the coast, where in looking in one direction the observer sees the sky above the water, and in the other the sky above the land. This difference is most plainly discernible just above the horizon-line. The vegetation of flat lands always differs from that of hilly countries, and in consequence foregrounds as well as backgrounds vary in the two cases. Not only from the standpoint of the artist, who sees the surface of things, and notes forms and colors, but also from that of the naturalist there is much of interest to be observed in level countries. Such lands generally are fertile, and even if there be no great variety, there is luxuriance and richness of color in their vegetable growths. There are no lusher greens than those of the New Jersey flats or of the pasture-lands of Zeeland in early summer. And so it was in the environs of La Plata. The pampas "arrayed in living green," over which was bent the blue dome of the sky, proved attractive enough to me to invite me to repeat on several occasions the first stroll which I had taken into *el campo*. At such times I found it most agreeable to

employ the services of a *cochero* to drive me out through the city and its immediate suburbs, setting me down at a given point, to which he received instructions to return several hours afterwards, and from which he brought me back to the Observatory. Once I went to Ensenada, cutting across the fields; once I took a long stroll northward in the direction of Buenos Aires, and a number of times I walked out to the south and the west of the city. It was a pleasure to escape from paved streets, to feel under foot the green sod of the country roads, to observe the growing things, in which the pulses of springtime were asserting themselves, to listen to the voices of nature, overhead the sky, "that shameless blue sky," which Signor Negri said he loathed, but which always seemed beautiful to me, and which did not always retain its blue tint, being sometimes overcast with the clouds of an approaching storm or sometimes in the evening just before sunset breaking into a veritable riot of color.

In my rambles about La Plata I was struck by the fact that many of the plants by the roadsides and in the fields were old acquaintances. The same process which has gone on in the United States is going on here. As European weeds have taken possession of the whole Atlantic seaboard in North America, so they are taking possession of the littoral of Argentina. Seventy-five years ago Charles Darwin called attention to the fact that the European fennel had escaped from cultivation, and noted that "in great profusion" it covered "the ditch-banks in the neighborhood of Buenos Aires, Montevideo, and other towns." It certainly has not ceased to propagate itself since his day and is everywhere in evidence. Darwin also called attention to the abundance of the cardoon (*Cynara cardunculus*) and

the mottled-leaved thistle of the pampas. Both are immigrant from Europe. The cardoon, its silvery bluish green multifid leaves strongly contrasting with the darker green of the grasses, covers wide tracts in the fields and by the roadsides, and in spots has taken complete possession of the slopes of the railway embankments. It is the wild form of the artichoke, and its buds are used as food, the fleshy base being pared, boiled, and served as a vegetable. It grows everywhere except in the very hot lands of the tropical north. Associated with it is the plant which Darwin speaks of as the "giant thistle of the pampas." This is also an adventitious plant, which has found its way into the country from the southern parts of Europe. It is known as "Milk-Thistle" (*Silybum marianum*) and has large wavy spinous leaves, of which those growing near the ground are dark green, mottled with white, recalling in their color-scheme the leaves of the *Asarum caulescens*, the Kamo-awoi of Japan, which was used as the crest of the Tokugawa shoguns. The white stain on the rosette-leaves of this thistle according to a legend current in southern Europe was caused by the falling of a drop of the milk of the Virgin Mary, and it was in allusion to this legend that it received the specific name *marianum*. The French call the plant *Chardon Marie*. In the lands of the Mediterranean it is cultivated to some extent; its young leaves being used as a spring salad, its roots employed as pot-herbs, and the heads being treated like those of the artichoke. These two species of thistle have literally taken possession of the land about the River Plate. They had done so already a century ago, and Darwin in speaking of the cardoon says, "I doubt whether any case is on record of an invasion on so grand a scale of one plant over the

aborigines." In speaking of the matter to one of my friends he informed me that the advent of these thistles is not altogether to be regarded as having been a curse. "If it had not been for the thistles," he said, "a few years ago, when we had a terrible drought, a great deal more of the live stock would have been lost than actually was the case. The cattle, which ordinarily refuse to eat the leaves, took to them, and their lives were saved."

I was astonished to see the hemlock (*Conium maculatum*), recalling the tragic death of Socrates, growing everywhere in the rankest profusion. As this plant is said to be fatal to philosophers and cattle, though it may be eaten by asses and goats, I was surprised to see thickets of it springing up on the grazing lands on which is kept some of the finest blooded stock in Argentina. Various European grasses are common. The white clover (*Trifolium repens*) is found everywhere as with us, and so are various other species of the same genus, all adventitious from southern Europe. Chickweed, bed-straw, purslane, shepherd's-purse, and ragweed were found growing by the road. I was impressed by the fact that not only these, but scores of other European and North American weeds, the "tramps" of the vegetable world, have found congenial soil in these lands of the South Temperate Zone, and are apparently slowly replacing the native flora. Just as the people of Europe have exterminated the aborigines, so the weeds of Europe are exterminating the lowly plants of the region, and are surely taking possession of the soil.

As I have already remarked elsewhere the inhabitants of Argentina manifest a preference for the eucalyptus as a shade-tree, and it appears about almost all farmhouses. The Araucaria is also frequently planted.

The genus Araucaria, which is related to the pines of the northern hemisphere, but differs from them strikingly in general appearance, is represented by several South American species, one of which known as the "Monkey-puzzle" or "Chili pine" (*Araucaria imbricata*) forms great forests in the southern part of the Andean regions. It apparently thrives well in the latitude of Buenos Aires. Its stately relative, the Norfolk pine (*Araucaria excelsa*), which in its native haunts often grows to the height of two hundred feet, is also to be occasionally seen in plantations in the vicinity of La Plata. Two or three species of Casuarina are also extensively planted. The "Pride-of-India" (*Melia azedarach*) is another tree which seems to enjoy popularity, and is often seen along the highways and about railway stations. Every one who has visited Spain or Morocco has learned to know the "Bellasombra-tree" (*Phytolacca dioica*). This great tree, related to the pokeberry of our waysides and waste places, is not uncommon about the estancias in the vicinity of Buenos Aires. Its huge fleshy roots, which grow on the surface of the soil, covering an area almost as great as the branches, look like great coiled and twisted serpents upon the ground, but, although the tree attains goodly proportions, and the broad leaves afford a grateful shade, I have conceived a prejudice against it, on account of its tendency like a great vegetable cancer to cover the soil with its spongy and unsightly roots. I imagine that it was introduced from Spain, and the specimens I saw about La Plata appear to indicate that they must have been planted long ago. All of the trees of this species which I saw were mature. The largest specimen I observed stood in the courtyard of a dilapidated farmhouse, and I should say that it must be fully fifty years old,

being at least four feet in diameter five feet from the ground. Various species of acacia are grown, and seem to propagate themselves as freely as does our locust-tree (*Robinia pseudacacia*). These plants seemed to be particularly liable to the attack of a species of bag-worm (*Œketicus platensis*), innumerable cocoons of which were pendent upon their branches. This same insect appears to ravage the poplars and willows. The eucalyptus escapes from their attacks, but I observed that a great many species of deciduous trees were infested by these curious insects. The female is wingless, as is the case with all of the species of the genus; the male is able to fly. The female remains in the cocoon, and is little more than a living mass of eggs. After fertilization has occurred the eggs hatch, and, emerging from the silken sack which has been the nuptial couch and then the coffin of the mother, the little caterpillars crawl forth and the cycle of life is renewed. The small water-courses and shallow ponds which abound in the neighborhood of La Plata are all beginning to be lined with willows and osiers. In such places I also found *Arundo donax*, the common reed of southern Europe. I saw a couple of fields in the outskirts of La Plata where this plant was being cultivated, but I observed that it had also escaped in spots and was propagating itself. According to Otto Kunze seventy-five per cent. of the plants growing in the immediate vicinity of Buenos Aires and La Plata are introduced species, the majority

Fig. 23.—Cocoon of *Œketicus platensis*. Nat. size.

of which have come from Mediterranean lands. It is odd to think how thoroughly the region is becoming affiliated with the region from which its early European settlers came, and that not only its human inhabitants, but its shrubs and grasses, its flowers and its fruits, should be Iberian or Italian in their origin. To the north under the hot sun of the tropics this is not the case. There the men and the plants of the Temperate Zone have a struggle for existence, in which the odds appear to be against them.

On my tramps I naturally was much interested in studying the habits of the birds. In a grove of willows which I found about a mile and a half north of La Plata I discovered hundreds of the Seed-finch (*Sycalis luteola*), congregating among the branches and filling the air with incessant twitterings and low warblings, which reminded me of that passage in Holy Writ, which likens the sound of the voices of the multitude before the Throne to "the voice of many waters." It was an uninterrupted stream of tiny bird-voices, which gathered and swelled into a great volume of sound, resembling that of a brook or small river tinkling over the stones and pebbles. The little creatures seemed to be so intent upon their chorus that they allowed me to creep in among the trees without at first being disturbed or ceasing their music. They are about as large as a canary bird, olive-green above, yellowish below, and admirably adapted by their coloration to concealment among the foliage of the willows, which were in their vernal dress. I was able to study them closely with the help of my opera-glasses, but after a while they seemed suddenly to take fright, and with a great rush of wings flew away in a cloud to an adjoining field, where there were other willows, and whither I did not try to follow

them, as to have done so would have led me through a lot of deep mire. I am sure their fright was occasioned by a hawk, which was prowling around, and which I saw afterwards alighting upon a stake with one of the songsters in his talons, which he proceeded to tear up and devour after the manner of hawks.

While I was engaged in studying the ways of the Seed-finches, my attention was attracted to the performances of a couple of Guiras (*Guira guira*). These birds, which belong to the family of the cuckoos, are about sixteen inches in length, ten of the sixteen inches being composed of the tail, which when the bird is on the wing is spread out like a fan. The tail-feathers are conspicuously colored, the two in the middle being dark brown, while the others are yellow at the base, glossy green in the middle, and white at the end. Their bills are red and they have a crest of reddish brown feathers upon their heads. The back and rump are white, as is also the breast, save for a few blackish streaks; the wings are blackish, marked with white. Altogether the bird is rather conspicuously colored. It is a very noisy fowl. It seems to have the habit of flying about and pitching on the tops of trees and hanging on the ends of branches uttering a succession of harsh cries and curious discordant notes, which suggest unhappiness and general discontent. There were some of these birds which haunted the grove about the Observatory, and at sunrise they used to make a great racket, but though I got a good view of them once or twice, and often heard their cries, I had my best chance to watch them in the willow-grove, where the two of which I have spoken remained after the Seed-finches took their flight. Hudson tells us that Azara, who wrote more than a hundred years ago, said these

birds were at that time common in Paraguay, but scarce in the neighborhood of Buenos Aires. Times have changed, and they are now quite common about La Plata, but there is reason to think that they are tropical birds, which for some cause are trying to adapt themselves to the more temperate climate of the south, for which nature has not quite prepared them, as they lack plumage with which to resist the cold. Hudson says that they often die of cold in the winter, in spite of the fact that at that time of the year they have the habit of congregating in flocks and roosting huddled together upon the branches in order to keep warm. They are said to be somewhat foul in their habits, and to be very prolific. The latter fact, and the fact that they find with the advent of civilized man into the region a greater supply of food than was formerly the case, seems to account for their survival and their increase in a part of the country which they have only recently invaded.

About the roots of the willow-grove there ran a small brooklet, not more than a foot or two wide. What was my surprise to discover that this tiny stream of water was full of mussel-shells and of great fresh-water snails belonging to the genus Ampullaria. I obtained specimens of the latter, which my colleague, Dr. Arnold E. Ortmann, since my return has determined to be *Ampullaria canaliculata* D'Orbigny. A number of these shells were lying about on the greensward under the trees, evidently recently having been robbed of their content, consisting of the animal which tenanted them in life. Empty shells of the same species were found here and there under telegraph poles and along the fences. The explanation of this fact is found in the habits of the commonest hawk of the region, the Ever-

glade Kite, as it is called in Florida (*Rostrhamus sociabilis*), rather a rare bird in North America, but the commonest of all the hawks in the meadow-lands about La Plata. This bird has a very strongly curved beak; in fact its beak is more strongly curved than is the case in any other bird of the group to which it belongs. The purpose of this strong curvature of the beak is realized when we learn that its staple food consists of the snails which it finds in the arroyos and shallow pools of the pampas, and which it extracts from their shells. When

Fig. 24.—Head of Everglade Kite (*Rostrhamus sociabilis*). ½ nat. size.

Fig. 25.—Shell of *Ampullaria canaliculata*. ½ nat. size.

I was a small boy I was set by my father, who was a conchologist, at the task of collecting the land-shells of the neighborhood where we lived. In order to remove the animals from the shells and prepare them for the cabinet I was taught to scald them in hot water, and then with a crooked pin to pull out the snails. The crooked pin which I employed served exactly the same purpose as the very crooked beak of these Everglade Kites. The birds in great numbers frequent the swampy lands and the borders of the small streams. Having found a snail-shell, an Ampullaria, they carry it to the top of a stake or a telegraph pole, and then, holding it

in their talons, insert their long curved beaks, and with a quick movement pull out the snail, which they devour, while letting the shell fall to the ground. No owner of an oyster-stand in Fulton Market could be quicker or more adroit in getting the fish out of the shell than these small cousins of the eagle.

On all occasions when going into the country I took with me my nets and other material for collecting insects. Of these I obtained a number, but the season was still too early for many species. Just as April is not the best time in the Middle States to collect our most interesting insects, so in the vicinity of Buenos Aires, October is not the most favorable month for the entomologist. The collecting grew better as the weeks passed by, and just before I left it seemed that many of the more showy insects were taking wing. Butterflies and moths were scarce even on sunny days, and but few species appeared. Insects of other orders were more numerous, but most of my captures represented the smaller diptera, hymenoptera, and coleoptera. Dr. Carlos Bruch has in his possession a wonderful collection of the beetles of Argentina, most beautifully arranged, and accurately determined. I spent a part of an afternoon, after the Museum had closed, in looking at his treasures. He has published a number of very valuable papers upon the beetles of the country and has illustrated them with fine drawings executed by himself. The good Doctor is not only a scientist, but also an artist. He has latterly taken up the work of studying the ants of the region. Of these there are a great many species, which have very curious habits, and are endowed with wonderful intelligence. The hymenoptera—the ants, bees, and wasps—constitute the aristocracy of learning in the insect world. They appear to

have more intelligence on the average than any other order of insects. Ever since the days of Solomon this fact has been recognized. It would require a large volume to relate what has already been learned as to the habits of these tiny creatures in South American lands, and the field has only been partially investigated. I was much interested in the ways of one species of ant, which is quite common in Argentina, and which has for ages been engaged in growing mushrooms. They are commonly known as "leaf-cutting ants." On a number of occasions I found them at work. They construct great underground galleries or cellars deep in the earth. Into these they carry masses of bits of green foliage, which they pile up in thick layers. In the beds of vegetable compost, which they thus construct, are implanted the spawn of certain fungi, which in the heat and moisture of these pits develop and grow and furnish an abundant supply of food, when other food is not easily available. It was a truly wonderful sight to watch the little creatures engaged in their labors. There was a nest or burrow of these ants under a pile of old rails, which was lying and rusting beside the railway track between La Plata and Ensenada. The entrance was at one side of the pile of rails, and could be seen plainly by stooping down and peering between the rails. The ants in a double stream were constantly pouring into this and emerging. Every ant which went in had a bit of a green leaf, which he had cut from the border of a leaf of alfalfa, which he carried between his mandibles in such a way that its thin edge was forward, and its mass was over the back of the ant. Those that came out had nothing. Along the path which they pursued were a number of soldiers which looked after the workers. The soldier ants are bigger

than the workers. They act as policemen along the line, preserve the ranks, hurry up the workers, and if any of them get into trouble come to their assistance, aiding them in adjusting their loads. There seemed to be the utmost order, and the workers appeared to be in a perfect rush of haste to accomplish their tasks. The line of march from the nest to the alfalfa field, where the leaf-cutting was going on, was more than four hundred feet long. In proportion to the size of the animals the distance was greater than it is from the Battery to Harlem. I measured off a foot along the line of march and timed the little creatures as they went by. It took them about ten seconds to get over a foot of ground. At that rate they made the run from the field to the nest in something more than an hour. The insects returning to the field for a load went more quickly. They seemed to scamper by in much less time. All, whether going or coming, apparently were on a dead run, moving as fast as their legs could carry them. A few of them which had heavier loads seemed to have trouble, and would stumble and run against little obstacles, and have difficulty in keeping their loads properly adjusted. When this happened the soldiers would hurry up to them, set them on their feet, and get them going again. The soldiers can always be distinguished from the others by their larger heads and bigger mandibles. I watched them quite a long time, and remarked to myself, that, if errand boys in New York could be found who would on foot carry parcels from the Battery to Harlem in an hour, and then start back again, and make the trip five times a day, there would be a revolution in the parcel-post. The muscular power of insects in proportion to their size is immense. Their endurance is incredible.

The rambles I took about La Plata afforded me the only opportunity I had during my stay in Argentina to come into touch with the life of the "Camp." Otherwise my observations were confined to such glimpses as are given from the windows of express-trains. The word "camp" is a simple abbreviation of the word *campo*, the Spanish equivalent of the English word "country." It is applied by the denizens of the towns to everything lying beyond their outskirts. The people of Buenos Aires, the *Porteños*, as they call themselves, with that self-complacency which is characteristic of the inhabitants of all large municipalities, are in the habit of thinking and speaking of everything beyond their limits as being a part of the camp. The word is also used in a more restricted sense to designate a large holding of agricultural land. On my way home from Mar del Plata I was introduced to a German gentleman, who informed me that he was returning to Buenos Aires after having paid a visit to "his camp." He said to me: "Ich habe einen Kamp nicht sehr weit von Cañuelas." A recent writer has said: "The Camp is the mainspring of Argentine prosperity. The marble palace of the millionaire, as well as the mud hovel of the immigrant, has to thank this rich soil of the *campo* for its foundation."[1] At the time of my arrival in Argentina spring-plowing was being carried on. In every direction men could be seen, generally with three or even four horses abreast, engaged in the work of breaking up the soil. Steam-plows are also used. The absolute flatness of the land, and its freedom from all stones, makes the use of modern agricultural machinery easy. The plowing which was going on was mainly for the corn, or maize, which is planted in September or early October. Wheat

[1] Nevin O. Winter, *Argentina and her People of To-day*, p. 48.

is generally planted in the fall, that is to say in March or April. So also is flax, which is an important crop in the republic. It gave me pleasure to watch the plowmen, and to see the rich black soil coming up and rolling over before their shares, as the bow-wave rolls up and turns over before the prow of a boat. The soil is a deep humus. It is so rich that up to the present time little care has been taken to return to it any of the wealth which is annually being extracted from it. I spoke of this to the owner of a large place, whose acquaintance I happened to make. He told me that thus far he had not felt the necessity of employing fertilizers to any extent. "I have been cultivating this land for many years, and my father did the same before me," he said, "but all that seems to be necessary is to get deeper plows, and go down a little further, and bring up a little more of the rich subsoil." It is the story of our rich western prairie-lands over again, but there will inevitably come an end to this process of robbing the land. The rotation of crops is followed to a considerable extent, and this has a conserving effect. The favorite grazing crop is alfalfa, as I have elsewhere observed. Such alfalfa fields I have never seen anywhere else in the world. Four crops of alfalfa hay are annually taken from the soil, and on the cattle-ranges the plant grows up as fast as the cattle eat it down. The yield of wheat is enormous. The best wheat-lands are not in the immediate vicinity of Buenos Aires, but more to the west and southwest, nevertheless a great deal of wheat is grown quite near the capital.

I was interested in studying the ways of the guachos, the "cowboys" of the country. They are mainly half-breeds, and adhere to the picturesque costume of their forefathers. They are expert riders, and use the

Wheat Sacked and Piled after Threshing on an Argentinian Ranch.

An Argentinian Farm-Wagon Used for Heavy Hauling.

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rope as do the cattlemen on our western plains. As, now and then, a party of them came by me on a lope, my mind involuntarily carried me back to the plains of western Nebraska and of Wyoming, and the mesas of our southwestern states, where just such riders, on just such errands bent, used to be a few years ago a daily sight. The days of the cowboy on our plains are numbered, but the guacho of Argentina still has a future before him, as the day of the small farmer has not yet dawned in the land. The "small farmer" in Argentina is to-day a man with only about five thousand acres in his possession. One ranch of which I heard is larger than the State of Rhode Island.

The transportation of crops from the land to the railways is effected by means of peculiar wagons, the like of which I have observed nowhere else. They have but two wheels, about eight feet in diameter, and are drawn by seven or eight horses harnessed abreast, or by three or four yokes of oxen. In such vehicles, very different in appearance from our "prairie-schooners," the grain is brought to the railways, thence to be transferred to the great elevators at the ports, whence it is carried to the markets of the world.

Just as in our western country, so here in the camp the store at the cross-roads is a place of concourse. I have already spoken of the store which we found in the swamps of the Paraná, and save that the buildings were not perched upon piles, and the customers did not come to them in boats, the stores which I found scattered here and there on the pampa were just like it in the medley of wares represented upon the shelves and in the character of the goods displayed for sale.

A pleasant incident during my stay in La Plata was to be invited to join a party of students and their

friends, who picnicked in a grove near the Museum, and who on that occasion welcomed a number of visiting acquaintances from Montevideo, who had come over on the boat the night before to spend a day in La Plata. After we had had our luncheon under the shadow of the trees, they informed me that they would like to accompany me to the Museum and take a peep at the replica of the big skeleton. This was done, and I had the pleasure of attempting to explain in very bad Spanish the anatomy of the beast to a number of highly interesting young people, who graciously condoned the blunders which I am certain I must have made. To be able to speak in unknown tongues was in apostolic times regarded as a proof of inspiration, but in modern times to essay to use a language other than that known from childhood sometimes implies more courage than inspiration. The results are at times comical. The tendency to translate literally from one language into another leads to embarrassment, and at moments to hilarity. I was told a comical story by one of my friends about one of his German acquaintances, who was trying to make his way about Argentina with the help of a pocket-dictionary and a phrase-book. He went into a hotel, and by signs succeeded in getting a good dinner set before him. When the meal was concluded, he took out his pocket-dictionary and opposite the word "how" found the Spanish word *como*, which in certain cases may mean "how," or "I eat." He then turned to the dictionary, and looking at the word "much," found its Spanish equivalent, *mucho*. He put the two together, and, turning to the waiter, remarked, "*Como mucho?*" The waiter politely bowed his assent and said, "*Si, señor*," being perfectly assured that the gentleman was correct in his statement

by looking at his empty plate. Thinking that the waiter might be deaf, the German repeated the observation in a louder tone, only to receive the same reply, "*Si, señor.*" Then he fairly shouted the words at the waiter, who rushed off, and returned with a tray covered with a second instalment of steaming viands, duplicating the first order. By this time the German gentleman was beside himself. Holding the pocket-dictionary in his hand and shaking it in the face of the waiter, and looking in disdain at the table, he roared the words, "*Como mucho?*" The waiter ran to the manager, informing him that the German gentleman at the table which he was serving was undoubtedly insane. The manager, who fortunately spoke the German language, came up and asked the cause of the trouble. An explanation followed. "Ah, but," said the manager, "you should not have said '*Como mucho?*'; you should have said '*Cuanto?*' and it would have been all right. After telling my waiter three times that you are a heavy feeder he naturally supposed you wished to be helped to a second portion." One of my friends, who some years ago visited the United States, provoked my mirth by telling me a story at his own expense of a little blunder which he unconsciously made upon his arrival in New York. Presenting a letter of introduction to one of the prominent citizens of Gotham, the latter cordially invited him to dine at his home on the following evening. After accepting the invitation he said, "I suppose it will be in order for me to come in my night-clothes." The amused look on the face of his acquaintance prompted him to ask questions, and he discovered the idiomatic difference between "night-clothes" and "evening dress." As these tales were told me after my attempt to discourse upon paleon-

tology in Spanish to the small circle before me, I have a latent and horrible suspicion that I may have innocently said something dreadful, without meaning to do so.

A pleasant afternoon was spent in the company of Professor Rollin D. Salisbury, who accompanied by a friend paid a visit to the Museum; and on the afternoon of October the 12th we had the pleasure of welcoming at the Museum, Mr. John W. Garrett, the American Minister, together with Mrs. Garrett, her mother, Mrs. Warder, and Sir Reginald Tower, the British Minister. They arrived about one o'clock, and, after spending a couple of hours in the Museum, visited the Observatory, where they took tea and met a number of the members of the Faculty of the University and their wives. It was the first visit which the American Minister had paid to La Plata and it was a pleasure to present him and his distinguished companion together with the charming ladies of the party to my kind friends, who were greatly pleased with the intelligent interest which they took in the work of the Museum. It was through the kindness of Mr. John W. Garrett, among others, that Professor John B. Hatcher was enabled to make his now classic journeys of exploration into the interior of Patagonia on behalf of Princeton University, and our eminent visitor showed that he was well acquainted with the scientific importance and value of the noble collections which are housed under the roof of the Argentine Museum.

One of the daily sights was the drilling of the troops, who marched from their barracks and paraded on the avenue immediately in front of the Observatory. They appeared to be stalwart and well-trained men, comparing favorably in appearance with

similar bodies of soldiery in other parts of the world.

In the parks and about the public buildings we often observed prisoners, dressed in striped clothing and strongly guarded by soldiers, employed in doing work upon the grounds. A number of new walks and driveways were in process of construction around the Museum. In front of the building, as I went to and fro, I daily saw the convicts at work. A number of them appeared to be half-breeds, with a strong infusion of Indian blood. One of these was a singularly tall, handsome, and even intelligent-looking young man. I had passed him so often, that I almost felt as if he were an acquaintance; and one day, as I went by while he was hard at work, I ventured in a pleasant way to say to him "*Buenos dias!*" I shall never forget the wicked, angry scowl, which met my salutation. I never repeated the experiment. The look he gave me convinced me that he probably was where he was for good cause. It was as if I had spoken to some wild animal held in captivity, a caged leopard, or a wolf behind the bars. Oh! the pitiful sadness of it! I inquired of one who knew, what were the offenses for which these men were paying the penalty. I was informed that their crimes were principally theft and homicide. Whatever may have been their offenses, it seemed to me to be good that they should be laboring in the sunlight, and doing something to make the world more beautiful, rather than that they should be languishing and pining away behind the blank walls of a dungeon. There is little to be said in favor of the policy, which under the plea of protecting "honest labor," lays the burden of endless idleness upon those who have fallen into criminal ways. The policy is cruel to the indi-

vidual and wasteful from the standpoint of the state.

Pleasant memories are associated with a visit which I paid to the Director of the Museum in Buenos Aires, Dr. Angel Gallardo, the distinguished successor of the late Florentine Ameghino. According to appointment I met Dr. Herrero-Ducloux at lunch-time at his club, and having passed a very pleasant hour with him, we went together to call upon Professor Gallardo at his residence. We were cordially received in his beautiful home, and after chatting for a while, and enjoying a peep at the art-treasures by which he has surrounded himself, we repaired together to the Museum. The Museum at the present time is not open to the public, the building in which the collections are housed having been pronounced unsafe. Plans have been prepared for the erection of a new and worthy structure, and the Congress has made an appropriation of a million of dollars with which to begin the work. The Museum in Buenos Aires in its origin long antedates the Museum in La Plata, and is associated in the minds of scientific men with the labors of a number of most distinguished investigators, who in former years have been connected with it. Among the famous men who took part in its work in early years must be mentioned Aimé Bonpland, the eminent botanist, who was the friend and associate of Humboldt during his journeys in South America from 1798–1804. After the return of Humboldt and Bonpland from their long and adventurous undertakings in the New World, Bonpland settled himself down in Paris and began the publication of the series of works relating to the flora of Mexico and South America which have given him an imperishable fame. He enjoyed the patronage of Napoleon, who made him a

pensioner of the state in recognition of his learning and achievements, and he was a prime favorite of the Empress Josephine, who in her retirement amused herself by endeavoring to grow the plants of the tropics from seeds which Bonpland had brought back with him. At the Restoration he forsook France, and, having been offered the Chair of the Natural Sciences in the University of Buenos Aires in 1816, he took up his home in the latter city. While conducting a scientific expedition on the upper waters of the Rio Paraná he was seized by the Dictator Francia, who at that time was the supreme ruler of Paraguay, and held in captivity for over ten years. When finally released in 1831 he returned to Buenos Aires, and subsequently, after having resided in various places for brief periods both in Uruguay and Argentina, died in Corrientes, where his remains rest until this day. One of those who came after Bonpland was the great German naturalist, Hermann Burmeister. After having filled professorships in the Universities of Berlin and Halle, and having represented the latter University in the first National Assembly in 1848, and served as a member of the first Prussian Reichstag, he went to South America to study and explore. Having spent a couple of years in Brazil, he returned to Germany and published a work in two volumes upon the fauna of that empire. In 1861 he accepted the Directorship of the Museum in Buenos Aires, and continued to hold the office until his death in 1891. To him we owe a great deal of our knowledge of the natural history of Argentina, and he was one of the first to write extensively upon the extinct fauna of the Tertiary and Quaternary ages in South America. His associate and successor was Dr. Carlos Berg, a man of great attainments, who was particularly well known

as an entomologist. At his death the Directorship fell to Florentino Ameghino, the famous, but somewhat visionary, paleontologist. He belonged to the numerous class of "self-made" scientists, possessing all their virtues, and some of their faults. His almost incredible industry, and the many contributions made by him to the literature of paleontology, will serve to keep his memory forever green, though the conclusions which he announced, often of a very startling nature, will in many instances not stand the test of more careful investigation; in fact many of them even before his death had been rejected by his contemporaries as invalid, not a little to his annoyance. The present Director of the Museum in Buenos Aires is a gentleman born to the purple. Possessed of an ample fortune, moving in the highest social circles, educated in the best schools of his native country and of Europe, he has already filled with distinction the Chair of Zoölogy in the University of Buenos Aires, and has made important contributions to the literature of the natural sciences. In speaking of him one of the leading men of the country said that he represented *la fleur de notre jeunesse dorée.* Under his guidance, supported adequately by the state, there is a brilliant future before the institution at the head of which he stands. At present the Museum is at a transitional point in its history. With new and well-designed buildings at its command, with the wealth of classic material already in its possession, it is destined under the guidance of its accomplished Director to take a very important place among the great museums of the world. The library of scientific literature under its roof is very large and rich. In fact it compares most favorably with the best libraries of its kind anywhere. Scientific men require access to books in order

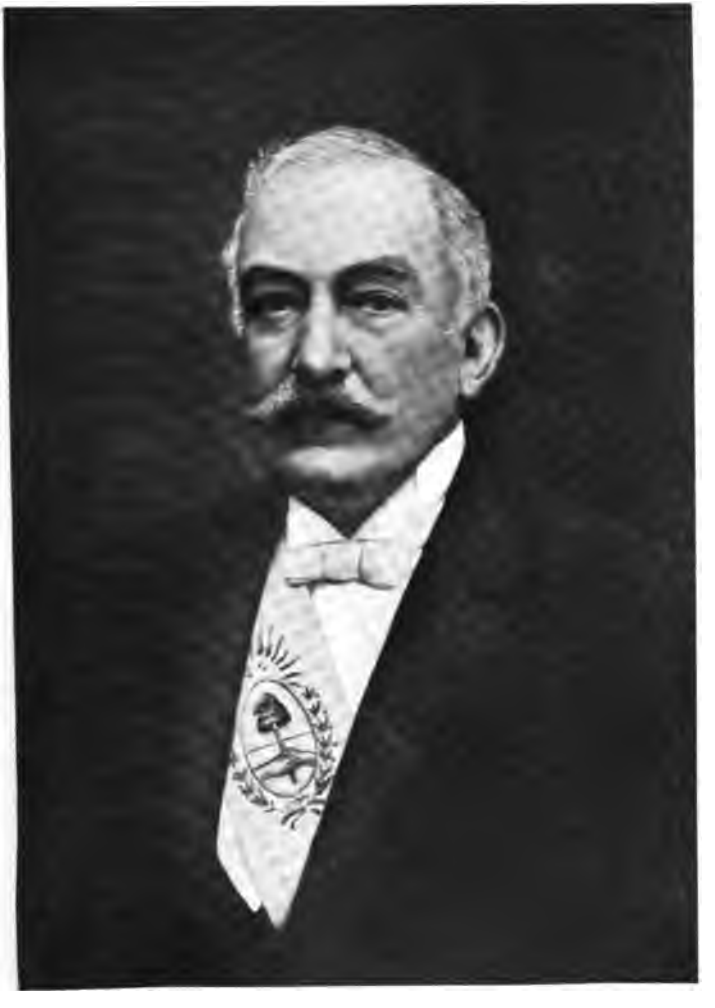
to the prosecution of their researches, and the Museum in Buenos Aires has a very remarkable collection, acquired in large part through the labors of the indefatigable Burmeister, whose private library he also bequeathed to the institution.

CHAPTER XVII

THE PRESENTATION OF THE DIPLODOCUS

"Crowned heads of Europe
All make a royal fuss
Over Uncle Andy
And his old diplodocus."—*College Song.*

THE work of setting up the replica in the Museum went forward from week to week quietly and steadily. It is not altogether an easy task to assemble such a specimen, and get everything into place without breakage. It requires as much knowledge and expertness as would be called for in setting up a large and very complicated machine. "There are tricks in all trades" and the trade of making and installing dinosaurs eighty and more feet in length is one which at the present time is known and understood thoroughly by only three persons, two of whom are the writer and his assistant, Mr. Coggeshall, both of whom have had more experience in this novel kind of work than it has fallen to any other mortals to acquire. The task not only has its difficulties, but also its dangers. The replica, although not nearly as heavy as the original, weighs several tons. The first thing which must be undertaken is to erect a strong scaffolding, and to provide in its upper part a support capable of carrying a heavy weight. Directly under this the central platform or base is placed. The top of this base dare not be put into



President Peña.

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position until the skeleton has been assembled, because there must be room left to get under the cross-beams, so that the supports which are destined to finally bear the specimen may be adjusted from time to time and the bolts which hold them may be tightened. Upon the central base planking is laid, and on this the vertebræ of the body, or barrel, are carefully assembled and put into position upon two more or less horizontal steel rods. When all has been carefully adjusted a steel rope is bent underneath the mass in such a way as to catch the temporary supports which hold the vertebræ, and the whole thing is tied together. The arrangement of the details is too complicated to make it worth while to attempt to describe it here. The next step is to slowly and carefully lift the mass into the air to the height of about fifteen feet. This is accomplished by means of blocks and tackles lowered from a beam, which generally forms a part of the scaffold put up at the outset, and is strong enough to carry a load of two or three tons. In La Plata we were fortunate in finding that we could make use of the iron beams which support the ceiling of the room. After the backbone of the monster has been lifted high into the air, the next step is to screw into place the tall supports of steel, which enter sockets provided at the pelvis and at the shoulders. When this has been accomplished, the next step is slowly to lower the mass until the steel uprights drop into the sockets prepared in the base to receive them, where they are at last firmly secured by nuts and washers.

The whole operation is delicate and not without its dangers, as we learned at St. Petersburg. Our experience there is never to be forgotten, and I trust may never be repeated. We had raised the vertebræ of the backbone into the air. Six moujiks, or ordinary

laborers, were stationed at intervals holding in their hands the guy-ropes, which were intended to steady the mass as it hung in its proper position above the base. Mounted on a tall step-ladder at the front end of the thing stood my assistant, ready to help me in the task of screwing the forward upright into position. I had lifted the heavy steel rod from the floor and was carrying it forward to put it into place, when the door of the room opened and a company of distinguished visitors, members of the Imperial Academy of Sciences, entered the room. I turned at the instant to bow to them, still holding the tall bar of metal in my hand, when something happened, I cannot tell what. My belief is that one or the other of the laborers, who had been cautioned neither to relax his hold, or to give a pull, forgot his instructions on seeing the distinguished gentlemen enter the room, and unconsciously gave a jerk to the guy-rope he was holding, or else let go. The mass turned turtle in the air, the forward end wrenched away from the tackle-hook, and the whole thing came down to the floor with a crash, which shook the building, and made the portraits of the Czars and Czarinas which hung about the walls rattle, as if there had been a small earthquake. The company of visitors disappeared instantly, looking, as they fled, as they might have looked had a bomb been exploded in the hall. Their precipitate exit almost provoked a smile, but the temptation to laugh was instantly overcome by the sight of the ruin which confronted me. My assistant came to my side, and I said to him: "This calamity is irreparable! Here we are six thousand miles from our base of supplies. There are no duplicates of these pieces at home. Even if there were, it would take six weeks to get them. To make a new set, and send them

over here will take three months. We cannot spend half a year waiting in this country." "Never mind, Doctor!" came the cheering reply. "I cannot tell you how I am relieved to have you standing here alive and well. I thought you had already gone in under the thing, being intent upon watching my part of the job. When the thing fell, I thought you were under it, and probably crushed to death. It nearly sickened me, but here you are, thank God! Drive these people out of the room, all of them, except Petz, the preparator, who can help us. Let us take account of stock. You and I can patch up the d—d thing, so that nobody will know that anything has happened." I confess that at the moment I had little faith in the prediction. Before us laid a mass of shattered fragments. A step-ladder had been splintered into kindling-wood. The cross-ties of the base, though made of oak, had been broken, as if chopped through with an ax. I almost shuddered to think what would have happened to me had I taken my place upon them, as I was just on the point of doing, before the crash came. But small as was my faith as to the outcome, it was at all events only right to make an attempt to repair the damage. It was the middle of the month of June, and at that time of year St. Petersburg is like heaven—"there is no night there." We could work from early morning until ten o'clock at night without artificial light,—and we did. We gathered up the pieces large and small; we searched for contacts, and, as we found them, put the bits together with that strong cement, which we know how to prepare. It was a most tedious undertaking. But all things at last have an end. When our task was completed, after a week had been consumed in performing it, there remained only as many tiny

fragments as would have filled the hollow of a man's hand which had not been restored to their places, and almost all of these were inside pieces, the omission of which would not be noticed, and which in fact were already replaced by cement. When the work was done we invited Dr. Tschernychew, the Director of the Museum, to examine it, and he expressed his entire satisfaction. The next time we went through with the task of swinging the big thing into place we took the precaution to lock the doors, and to ask some of the higher officials of the Museum to stand by the ropes. Since then we have invented a contrivance, which enables us to dispense with the assistance of helpers, and makes the repetition of such an occurrence impossible, as we believe.

Everything went well in Argentina. At last the replica stood in place, its head pointing to the rotunda, and we were able to tell the cabinet-makers to apply the finishing touches to the beautiful bases. These were made of the wood of the southern walnut (*Juglans australis*) which resembles the lumber of our own black walnut, but appears to be somewhat denser, finer grained, and not quite as dark in color. The tree grows on the foot-hills of the Andes.

Having completed the work of installing the specimen, it became my duty, as the representative of Mr. Carnegie, to report to the President the accomplishment of the errand upon which I had been sent. I had received through Mr. Garrett, the Minister of the United States, an intimation that it would be the pleasure of the President to receive me on the afternoon of October 15th, at three o'clock. In company with Mr. Garrett, I repaired to the Executive Mansion at the appointed hour. We were cordially welcomed

by the Secretary of the President, who bade us be seated. The audience-room is a fine apartment, about which hung portraits of former Presidents of the Republic. President Peña immediately entered the room, and extended cordial salutations to Mr. Garrett, who in turn presented me. The President gave me a hearty grasp of the hand, and expressed his pleasure at seeing a friend of his own cherished friend, Mr. Carnegie, whom with evident pleasure he recalled as having been one of his colleagues at the time when the first Pan-American Congress met in Washington in the years 1889–'90, and of whom he spoke in terms of regard and warm admiration. The conversation turned upon the nature of my errand; the story of the specimen had to be briefly told; and the fact that it had been duly installed in the National Museum at La Plata was mentioned. The President called my attention to the fact that under the constitution he is forbidden to leave the capital, without going through the formality of turning over the reins of government for the time being to the Vice-President, even for so short a journey as that to La Plata, and stated, that, had it not been for this, he would have gone down to the Museum in person to accept Mr. Carnegie's gift, as he understood had been done by the President of France, the Emperor of Austria, and others. He asked me a number of questions as to my impressions of Argentina, and said he hoped that my stay might be extended long enough to enable me to see more of the country than I had as yet seen. He inquired as to the prospects of the coming November election in the United States, without expressing partiality for any of the candidates for the Presidency. He spoke of the Republic of the North in terms of good-will and generous appreciation. He told me it

was his intention to immediately write to Mr. Carnegie, thanking him for his present to the Museum, which he was pleased to accept on behalf of the people of Argentina. The interview, which naturally was not protracted, was marked by the interchange of pleasant compliments and a little merriment due to the fact that while the President spoke in Spanish, I was with his gracious consent allowed to use the French language, which the President understands perfectly, but which he does not care to employ when he knows that his hearers understand the language of Castile.

It was pleasant after we had withdrawn to hear Mr. Garrett remark that the President had plainly manifested greater pleasure and interest in the meeting than he had known him to show on any similar occasion.

President Peña is a man of fine appearance, tall, and dignified in his bearing. He had gained wide experience in the service of his country as a diplomat before his election to the Presidency. Throughout his administration thus far he has proved himself to be a most capable and efficient head of the Government. His father before him was President of Argentina from the years 1892–1895. He therefore came to his present exalted position possessed of an inherited acquaintance with the requirements of the office.

Before the installation of the replica had been completed we were informed one bright morning as we entered the Museum that Dr. Samuel A. Lafone-Quevedo, the Director, had returned from his lengthy absence in Europe. We found him standing with a group of his friends in the rotunda of the Museum, and were delighted to receive from him such a cordial and unaffectedly hearty greeting as only he knows how to give. "Don Samuel," as he is affectionately called by

the Staff of the institution, is of English extraction, and a graduate of the University of Cambridge. In spite of the fact that he has seen many a winter pass over his head, he has lost none of the spirit of the boy, and his cheerful humor and merry laugh are contagious. There was no stiff formality accompanying our introduction, but we instantly were made to feel that we were friends, and as such taken at once to his heart. Nothing could have been more delightfully frank and free than his reception of the two strangers, who, like the Greeks of old, had invaded his domain, bearing not a wooden horse, but the skeleton of a still more fearsome beast; a beast, nevertheless, which concealed no danger lurking behind its ribs. A few days after the return of the good Doctor, I was approached by one of the members of the Academy of Science, who requested me to make no engagements for the evening of the 15th of October, because at that time the Academy had resolved to have me as their guest at a function to which I might expect shortly to receive a formal invitation. This in due time came to hand. On the evening of the same day upon which I had the pleasure of meeting the President in Buenos Aires, I repaired according to the invitation to the Sportsman's Hotel in La Plata, where the large dining-room on the upper floor had been made ready, and where were gathered the members of the Academy of Science, including the entire Faculty of the Museum. Greetings were exchanged with the company of distinguished men, all of whom I had already come to cherish in my thought as true friends. Then we found our places at the table, the decorations of which were at once beautiful and provocative of mirth. There were flowers, beautiful flowers, and in the center of the table was a model of the Diplodocus,

fully five feet in length, which I had already seen in the Museum. Little did my friend, the artist, Charles R. Knight, imagine, when he was making this model, that it was to serve as the center-piece at a banquet to be given to one of his acquaintances in far-away Argentina. There were two menus beside each cover, one intended to be taken seriously, not so the other. The latter claimed the most attention. It is worthy of being here reproduced, as it was the next day in all the papers of the Capital.

MENU.

HORS D 'ŒUVRES.

Sauterne. Canapé Multimillionaire.

POTAGE.

Crème loess pampeano.

POISSON.

Filet de Lepidosiren à la Papa Roth.

RELEVÉ.

Margaux. Petites bouchées à la Don Samuel.

ENTRÉES.

Grande pièce Diplodocus à la Holland.

LÉGUMES.

Calamites Sauce Nägelschmied.[1]

RÔTI.

Phororhacus Bruche[2] au cresson.

ENTREMETS.

Champagne
Carte blanche. Pudding diplomatique Sce groseille.
Bavaroise Panachée.

Moka. Cigarres.

[1] Nägelschmied = Herrero-Ducloux, a pun for which the author should be compelled to do long penance.

[2] A veiled reference to Professor Carlos Bruch, an equally horrible pun.

Unfortunately the illustration at the head of the menu and which represented the features of the Founder of the Carnegie Institute, surrounded by a wreath constructed of the bones of the Diplodocus, I must omit, because of the limitations of space.

We were a merry and a very cosmopolitan company. The scholarship of Argentina, of England, Germany, France, Switzerland, Spain, and Italy was represented at the table by men, some of whom had been born in these countries, and all of whom had received their early training in the universities of one or the other of these lands. All, except the writer, were citizens of the Republic which floats the white and blue flag. All were men who had done things worth the doing. The dinner was excellent; mine host Salvadori had excelled himself. When we came to the cigars Dr. Lafone-Quevedo rose and in a graceful speech expressed the gratitude which was felt by the Academy of Science of the University of La Plata, which is charged with the administration of the affairs of the National Museum, for the recent gift of Mr. Carnegie, and proposed the health of that generous citizen of the United States of North America and his representative, the guest of the evening. When this had been done, the speaker announced that he had still another duty to perform before he took his seat, and that was to welcome the guest of the evening into the ranks of the Honorary Membership of the Academy of Science of La Plata, and handed to the writer a diploma certifying to his election. The writer replied by expressing his deep sense of the distinguished and altogether unexpected honor which had been conferred upon him, and which he accepted as a highly prized token of good-will, but much more as a token of esteem for his distinguished

fellow-countryman, whom he had the honor of representing. Allusion was made to the bonds of friendship, ever increasing in number, which unite the men of the two Americas, and the writer concluded by proposing the health of the President of Argentina, the long life and prosperity of the Academy of Science, and sempiternal success to the honest efforts of thinking men in all lands and under all skies to bring about the reign of peace and friendship among men.

As the first steamer for New York, upon which we were able to secure accommodations for our return, would not sail until October 26th, leaving a period of ten days at my disposal in which to make an attempt to see a little more of the country, I resolved to make an excursion westward and obtain a glimpse of the Andes. Mr. Garrett invited me to accompany him on an excursion, which he had already arranged to take from Buenos Aires to Valparaiso and thence southward, returning by way of the Strait of Magellan. Nothing would have given me greater pleasure than to have accepted the opportunity to make this tour in such pleasant company, but I decided that it would be inexpedient for me to undertake the journey, as my return to New York would thus be delayed for a month. Meanwhile I received an invitation to partake of the hospitality of the University of La Plata at a banquet to be tendered to me at the Jockey Club in Buenos Aires on the evening of October 24th, at which I was informed that the Faculties of the two Universities of La Plata and Buenos Aires would unite in recognizing in this way the kindness of Mr. Carnegie to the nation. I resolved after careful consideration to content myself with an excursion to Tucumán. This would give me an opportunity to see a wide extent of

the country, take me to a spot of great historic interest, and give me a glimpse of the Cordilleras. I left to my obliging assistant the task of packing up the specimens intended for the Carnegie Museum, which had been presented to us by the authorities of the University, and betaking myself to Buenos Aires, made my arrangements for the journey.

CHAPTER XVIII

A TRIP TO TUCUMÁN

"Then we gather as we travel
Bits of moss and dirty gravel,
And we chip off little specimens of stone,
And we carry home as prizes
Funny bugs of handy sizes,
Just to give the day a scientific tone."—*C. E. Carryl.*

THE "Tucumán Limited" leaves the Retiro Station in Buenos Aires at ten o'clock in the morning. A few minutes before the time of departure I boarded the train and settled myself in my compartment. The day was bright and cool. There were many people upon the platform, some of whom had evidently come to say farewell to their friends; newsboys were crying their wares; venders of sweetmeats and fruits sauntered along under the windows of the cars, displaying the contents of their baskets, and soliciting purchases; officials in uniform were bustling hither and thither; workmen in blue overalls were opening and shutting the axle-boxes, and were followed by men with hammers who tested the wheels with resounding taps. It was evident that the departure of the "Limited" was a more or less important event in the daily routine of the little railway world, which held the stage for the moment. At last the conductor took his whistle from his pocket and blew shrilly, then called out, "Aboard!" The

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train began to move, there were waving handkerchiefs, parting salutations, and in the eyes of a few of those who were left behind there were tears, the cause of which it was left to fancy to surmise.

As the run from Buenos Aires to Tucumán of eleven hundred and fifty-six kilometers, equivalent to seven hundred and twelve miles, is scheduled to be made in a little more than twenty-four hours, the motion of the train was not laggard. We quickly passed through the crowded yards of the terminal, made a short stop at Belgrano, the fashionable northern suburb, and then settled down to a steady gait of forty-five miles an hour. The train was vestibuled, made up of four sleeping-cars, a dining-car, a mail-car, and a baggage-car. The cars were almost as large as those in use in the United States, and precisely similar in their appointments to the *wagon-lits* in vogue on the International Expresses in Europe.

We glided by villas and gardens sloping toward the river; we slipped past the Junction leading to El Tigre; and then found ourselves out upon the wide pampas. To the right in the distance a low fringe of willows and poplars along the horizon indicated the bank of the River Paraná, which the railway more or less closely parallels from Buenos Aires to Rosario. There are four tracks on the road-bed between the two cities, and the time made over this stretch was quicker than on any other portion of our journey. The track is level, for long distances straight, and very well laid, so that fast running was in order. On either side of the track were fields of grain, and expanses of pasture-land. The country gave the impression of being carefully tilled. The fields were neat, the fencing in good order. The corn, or maize, which was just appearing above the

soil, had been regularly planted, and looked flourishing. There were square leagues devoted to alfalfa. Finer fields of this useful plant are not to be seen anywhere. Now and then we caught sight of ranch-houses, their white walls peeping out from among the dark green of the eucalyptus-groves, by which they were surrounded. The whole landscape was dotted with herds of short-horns, and great flocks of sheep. As we came nearer to Rosario wheat-fields became more numerous. On the right, as we went along, we occasionally saw towering above the fringe of willows the masts of ships or the funnels of steamers going or coming on the way to Rosario. Now and then tall chimneys and high roofs indicated the location on the banks of the stream of some great packing-house, or *frigorifico*, where meat is frozen for export to the European markets.

Our first stop was made at Campana, where the locomotive-driver replenished his water-tank. The system of taking water while the train is in flight, long in use upon some of the North American railways, does not appear as yet to have been introduced into Argentina. At all events I did not observe that it is employed on any of the roads upon which I traveled.

In the ditches which we crossed as the train dashed forward I caught glimpses now and then of cormorants fishing in the shallow pools. Here and there a heron sailed away into the skies. I was interested in observing that the Scissor-tailed Fly-catcher (*Milvulus tyrannus*) was quite common in the region. This bird, which is related to our common King-bird, differs from the latter in having a long forked tail, the two outer feathers of which trail behind like ribbons as it flies. Just as it alights upon the top of the thistles or the fence-posts it appears to have the habit of spreading its

tail in the form of the letter V. Its singular appearance at once attracted attention. It is said to possess the same intrepid and pugnacious disposition which characterizes the King-bird, and will fearlessly attack hawks, or other predaceous birds, and harry them, until they fly away, screaming for mercy. The Térutéru, or Argentine Lapwing, was everywhere to be seen, standing in quiet contemplation upon one leg, or else rapidly running about, or standing and flapping its black and white wings, much as a hackman on a cold winter day will wave his arms and beat his shoulders to restore circulation. What the object of this action on the part of the bird may be I do not know.

Fig. 26—Scissor-tailed Fly-catcher (*Milvulus tyrannus*). ⅛ nat. size.

The train was moving too rapidly most of the time to allow me, though I strained my eyes, to make out the flowering plants which here and there were blooming alongside of the track. I noted thickets of fennel, cardoon, and poison hemlock completely filling for long distances the right-of-way between the ends of the ties, and the wire-fences which separate the property of the railroad from the adjoining land. A few miserable specimens of *Erythrina cristagalli*, which survived on the edge of a pool, which the railway at one point

skirted, were in blossom; and I could imagine how fine must be the appearance of the great river-marshes, where this plant still survives, when they are covered by its bloom.

As the sun mounted toward the zenith, and the noonday heat became intense, I noticed that mirages sprang up in the distance. Ranch-houses and groves appeared above the horizon-line with reversed outlines, as if reflected from the borders of a lake. Great shining sheets of water seemed to spread over the landscape. The illusion was perfect. My attention was called to another optical illusion, which for an instant puzzled me. In the middle distance, and in fact quite near at hand ahead of the train, I observed what appeared to be broad reaches of blue water, filled with low marsh-plants. When I first saw this, I did not think anything about the matter, believing that what I beheld was what my eyes taught me to see, but when the train reached the spot where I had seen the water, and where from appearances we ought to have been running over piles through a marsh, I discovered that the ground was solid. A little reflection revealed the cause of the illusion. The land for square leagues was sown with flax, and it was in flower. The lines of Longfellow came back to memory:

"Blue were her eyes as the fairy flax."

The great sheets of water, which I had seen, were the pampas covered with the bloom of the lowly plant, millions of acres of which are annually sown in Argentina, not for the sake of the fiber, but for the sake of the seed. Linseed is a standard article of export. Such fields of flax I had never seen before, and unless it

be in our own northwest, or upon the steppes of Russia, such fields of this plant do not occur elsewhere upon our globe. One field of flax I saw was said to cover over fifteen thousand acres.

At lunch-time I went forward to the dining-car, and found that I had been assigned a seat at table with three young gentlemen, who informed me that they were students in the University of Buenos Aires, and were on their way to their home in the city of Salta, having been suddenly summoned thither by the death of a relative. They proved to be intelligent and agreeable young men, with whom it was a pleasure to converse during and after luncheon, and who told me much which interested me concerning that part of the country in which they lived. The elder of the three was evidently responsible to some extent for the care of his two younger companions, and the sensible and fraternal way in which he discharged his duties attracted me to him.

We made a short stay at San Nicolas about half-past two in the afternoon. The place is the point of junction of a branch-line of the railway, and the site of packing-houses and grain-elevators. There were several large vessels alongside of the latter.

We reached Rosario at a quarter before four o'clock in the afternoon, and remained fifteen minutes, during which a change of engines was made. The railway-terminal is at some remove from the more densely built-up portions of the city. I walked out into the open space in front of the station, where tram-cars and cab-men were congregated. As the sunlight fell upon the walls and towers of the central portions of the town, I realized that it perhaps had been a mistake on my part not to have included it in my list of stopping-places,

and subsequently, when I met on the train an enthusiastic resident of the town and fell into conversation with him, I had the sin of my omission more vividly impressed upon me. He is a banker in Rosario and did not hesitate to inform me in a good-natured way that for a gentleman from North America to have come so near one of the really great commercial centers of South America, and only to have peeped at it from the railway-station, was a very singular procedure. I could only retort by saying, "*Eh bien!* I have been in Paris four times during the past three years, and each time only stayed long enough to get breakfast and change cars."

When leaving Rosario the locomotive was attached to what had been the rear of our train in coming up from Buenos Aires, and the window of my compartment henceforth faced to the east and not to the west, as it had up to this time. As the sun gradually declined I watched the shadow of the train creep out over the level plain. I have crossed the prairies of Minnesota and the Dakotas, of Kansas and Nebraska, of Manitoba and Alberta; I have traveled over the steppes of Russia; but in none of them have I seen such absolutely level lands as those which lie between Rosario and Irigoyen. The horizon is that of the ocean; an upturned clod attracts attention; a hut looks like a house; a tree looms up like a hill. After leaving Rosario stops became more frequent. Just after one of these, as the train was slowly beginning to get under way again, we came up to a herd of cattle on the road alongside of the railway track; a young woman on horseback was trying to drive them toward the village we were leaving. For some reason or other the horse she was riding took fright. He reared and plunged and began to buck, but

the girl sat her saddle. I leaned out of the window to watch the exciting scene, and when I caught the last glimpse of her she was evidently getting the mastery of her unwilling mount. Her skill and pluck were equal to those of any guacho.

The sunset came with a glory too rich for words or palette to depict. Huge clouds hung in the eastern sky above the dark emerald green of the horizon. As the sun went down all the colors of the spectrum were revealed in the heavens. The clouds which had been white became yellow, then pink, then orange, then crimson; between their soaring masses the sky ranged from apple-green near the horizon to the deepest cobalt in the vault above. The glory of the sky was reflected upon the land. The green of the leagues of growing grain was reddened and transformed into a rich olive tint, the plowed fields became russet touched with gold. The dull uniformity of the landscape seemed to be lost in the weltering splendor of the dying day, and when the sun had set, and the world below grew dark, the glory still lingered among the pinnacles of the clouds high overhead. When at last deep night had fallen, from the damp herbage rose the fire-flies. In places they fairly swarmed, and appeared to be larger and to emit a stronger light than the species we know in the United States. From their flight I judged them to be true Lampyrids, belonging to the same group of insects which we know in the United States, not the *Elater noctilucus* of the tropics, the "mooney" of the Jamaican negroes, which I subsequently saw on my journey, and which gives forth a different glow.

Having been reminded that the dinner hour had come, I repaired to the dining-car and found myself placed opposite to a young lady, beside whom a stout gentle-

man, who came in a few moments later, seated himself. I ventured to converse with the latter, and he informed me that he was a Bolivian on his way home to La Paz by way of Salta and Jujuy. While we sat and talked the lady never uttered a sound, and accepted what was placed before her, as course followed course, without note or comment. She seemed to me to be in trouble, but I did not venture to speak to her. At last my Bolivian acquaintance rose to leave the table, and I was about to follow his example, when the young lady broke her silence by saying to me, "Dear sir, are you an Englishman?" I replied, "Not exactly, but I come very near to being one. I am an American—a North American." "Oh!" she said, "I have always heard that your people are horrid. They teach us that in Argentina, among the circles in which I move; but you do not look as if you could be unkind." With that she handed me a card, telling me that it was her father's card. I glanced at it and recognized that it was the card of a man who held a responsible position in a great firm in Buenos Aires. "I am in deep trouble," she went on to say. "My father, whose card I have given you, brought me to the train this morning and saw me off. I had a compartment, which I supposed I would occupy alone on my journey to Tucumán, whither I am going without escort, to meet friends who live there. I do not speak a word of Spanish. After we were under way a woman was brought and put into the compartment with me. I did not object, but presently she produced a bottle or two from her belongings, and since the middle of the afternoon she has been in a state of complete intoxication. At Rosario they put two other women into the compartment to occupy the upper berths. Of these women I cannot tell you what I

think, but they evidently are not ladies, and their conduct since they came on board has been simply shocking. I tried to explain to the conductor that he must provide me a place away from this dreadful company in which I find myself, but he does not understand English or French. Will you not help me?" I at once sent for the conductor and told him that he must promptly make arrangements to give the young woman a place in a compartment where she would not be annoyed. I explained to him the circumstances, and told him that unless something was done immediately I would report the matter to the railway authorities. He presently came back to the dining-car and informed me that the wife of one of the inspectors of the railway, who occupied a compartment by herself, a *señora muy respetable*, was willing to give shelter to my acquaintance, and allow her to occupy the upper berth. I went back to the car in which she was, in order to act as interpreter in case of necessity, and being confronted by her three companions, who were holding a levee in the compartment with half a dozen male acquaintances, I realized that she had only too good reason for appealing to me. I said a few stern words to the disorderly crowd, which caused the men to slink away for the moment. The moral of the incident is simply this: that it is inadvisable and may be inexpressibly uncomfortable for a woman to travel in these lands without escort, and particularly when unacquainted with the language. I did not see the young Englishwoman until about noon the next day, when, as I was alighting from the train, she came up to me on the platform of the railway station at Tucumán, and thanked me for having intervened on her behalf.

When the dawn came on the following morning a

change had taken place in the landscape. The country was no longer as flat as it had seemed throughout the whole of the preceding day, but was gently undulating. The vegetation was different. There were on all sides thorny thickets, and low forest growths. I recognized various species of acacia and mimosa. *Prosopis alba*, with its feathery leaves, and the "chanar"-tree (*Gourliea decorticans*) were common. Here and there a few specimens of the quebracho-tree had escaped the clutches of the "wood-butchers," in spite of the fact that they were growing near the line of the railway. The quebracho colorado (*Schinopsis Lorentzii*) is one of the notable trees of the country. Out of its almost imperishable wood, which is nearly as hard as ebony, are made the railroad-ties for the various lines, which are gridironing the southern continent. Latterly it is being used for the manufacture of tannin. About twenty-five per cent. of the substance of the tree is tannin, and this is being extracted in huge quantities, and the noble trees are disappearing as fast as they can be cut down and their wood chewed up by powerful machinery and the tannin separated. The bulk of the extract is exported to the United States, though Germany and Great Britain are also large consumers of the product. The name *quebracho*—"break-ax"—was given to the tree because of the hardness of its wood. There are other trees to which the same name has been given by the natives, and one of these the quebracho blanco (*Aspidosperma quebracho*), the bark of which contains certain alkaloids reputed to possess medicinal properties, is also one of the common trees of the semi-forested belt through which our train was passing. But more striking than any of the growths I have mentioned were the giant cacti. Many of these

were fully forty or more feet in height. At the ground they appeared to be from two to three feet in diameter, and then rapidly branching, sent up huge candelabra-like tops, which were covered with large starry flowers, some white, some yellow, some crimson. There were evidently a number of species. These growths were in many places being cut down and burned up to make way for the planting of alfalfa. I saw the Italian laborers at work in the clearings, and here, there, everywhere, columns of smoke could be seen ascending from the midst of the forest just as I used to see them when I was a child in the Middle West of our own country. What would not the people of Ohio, Indiana, and Kentucky now give if they could only recall to the land the growths of trees which once covered it? The sight of these giants of their race being hacked down and destroyed impelled me on my return to Buenos Aires to suggest to Señor Ramos Mejia, the Minister of Public Works, that there ought to be steps taken to make a reservation of a large tract of this interesting region, easily accessible from the railway, so that future generations of Argentinos might know what the land was like when the fathers first invaded it. He admitted the desirability of such a step, but said, "The General Government possesses no claim to the lands within the limits of the organized Provinces. We have followed the example of your country. The United States of North America cannot set up 'forest reservations' in Pennsylvania. If such reservations are made it must be by the Province." Thus the matter rests. I hope, however, that the Provinces, if not the General Government of Argentina, may not fail in the near future to take steps to preserve at least some small portions of the primæval forests in their native wildness.

At La Banda there was a short stay made. This is the point where passengers bound for Santiago, the capital of the Province of Santiago del Estero, change cars. Here there were extensive irrigation ditches, and the work of reclaiming the land in the neighborhood appears to be progressing. The soil is very red, and seemed to be somewhat impregnated with iron. It did not appear very fertile to me, but I observed that along the irrigation canals a rank growth of vegetation occurred, so that it no doubt possesses more agricultural value than at first sight it suggests. The ride during the remainder of the forenoon was hot and rather dusty. We were behind time, owing to some detention which had taken place during the night, and we did not reach Tucumán until noon. The approach was interesting. We left the thorny forests behind us, and found ourselves in a wide and evidently very fertile plain, given over almost entirely to the cultivation of sugar-cane, which was just springing up. The fields seemed to be very carefully tilled and the young canes were in fine condition. Ahead of us were the blue slopes of the Cordilleras, their tops veiled in clouds. Just at their feet rose the towers and white walls of Tucumán. The tall chimneys of the sugar-factories are a striking feature of the landscape.

I had taken pains to make inquiries of several persons on the train in regard to hotel accommodations in Tucumán, and found that all agreed that the best hotel in the city was one which had only recently been built, and which I was informed represented the last word in the architecture and furnishing of such a house. At the station I promptly surrendered my valise to the custody of a young man, who wore a cap upon the band of which the name of this hotel appeared. He did not seem averse to taking charge of my luggage, but rather

startled me by telling me, that, while I could get a room in the house, I would have to go elsewhere for my meals, as the hotel was closed in part, and the chef and the waiters had all been dismissed the week before. I resolved, nevertheless, to inspect the house. I found I had not been misinformed as to its character. The building is large, the room offered me was as good as I could have obtained in the best hotel in New York, and there was a fine bath-room connected with it, which in view of the heat and the dust which had settled into every pore, led me promptly to decide that wherever I might take my meals, this was the place for me. The sight of a neatly tiled bath-room, and an immaculate porcelain tub resolved all doubts on the instant. When the dust of the journey had been washed away, I felt as I imagine King Naaman must have felt after he had obeyed the prophet and taken his plunge into the Jordan. The owner of this fine new hotel in Tucumán is the owner of two large and successful hotels in Montevideo. His reason for closing the house in the north is probably the same which leads the proprietors of hotels in Florida not to keep them open in the summer season. The people about the hotel had no reason to assign for the closing of the dining-room, except that they had received orders to do so. A relative of the proprietor who seemed to be in charge, and who is an English lady, said to me of the owner, " 'E is makin' lots o' money in Montevideo, but I don't know 'ow it is up 'ere, tambien; it 's not for the loikes o' us to be givin' 'im adwice, tambien; 'e knows 'is hown biznis, tambien." Her use of the Spanish word "tambien" to interlard her sentences very much as "Selah" is employed in the Psalms, was delicious.

I discovered that I would have to take my meals at a

hotel located in the central part of the city, on the Plaza Independencia, and as the sun was scorching and this hotel was located fully half a mile from my bath-tub, I formed an acquaintance with Antonio, the owner of a fiacre and a sound horse, with whom I made a bargain that he would enter into my service, accepting wages for the day instead of for the trip, and he became my *fidus Achates*. He seemed pleased to enter into the arrangement, and I had no occasion during my stay to regret the fact that I had made it. The hotel, to which I resorted for my luncheon, was a low structure, two stories in height, very deep, and traversed through its entire length by a long, narrow patio over which was a glazed roof. At the extreme rear of this cool passageway, nearly two hundred feet long, was the dining-room. On either side of the passageway were offices, and bed-rooms for guests, though most of the guests have their bed-rooms on the second floor, with their doors opening out upon a balcony. The place had a somewhat rusty and antique appearance, but the viands were good and the service was prompt. After luncheon I informed Antonio that I wished to make a round of the city and see the principal sights. We first repaired to the "Casa Historica." This is the building in which on the 9th day of July, in the year 1816 the representatives of the Spanish colonies in the southern part of the continent of South America assembled, and where they formulated and adopted their declaration of independence from Spain. The building is about twenty feet wide and sixty feet long, roofed with tiles. The interior forms a single room, floored with rough red tiles about a foot square, somewhat irregularly laid. The walls are whitewashed, and the ceiling, which is built of rough planking, is also

whitewashed. At one end of the room is a large rudely carved arm-chair, in front of which is a low table. The arm-chair is the one which was used by the President of the first Congress, and the table is said to be the same which was used at that time. There are a few other chairs which range along the sides of the room; otherwise there is no furniture. Upon the walls hang a framed copy of the Declaration of Independence, and portraits of a number of those who were the signers of the same. Let into the walls are a number of commemorative tablets. This lowly structure is preserved and protected from decay by having built over it an outer structure surmounted by a great dome of glass, under the middle of which it stands. In the courtyard in front of this handsome outer edifice on either side are two great bronzes commemorating the passage of the act by which the people of the South American Colonies declared their freedom from the yoke of Spain. The one on the left, as the courtyard is entered, represents the members of the Congress gathering about the table in the Casa Historica to affix their signatures to the immortal document. The one on the right represents the reading of the Declaration to the assembled people. These tablets are about twenty-five feet long and ten feet high, and the figures are life-size. In the center of the outer court are planted a number of palms, which are growing vigorously and afford a grateful shade. I lingered for some time at this spot, stirred by emotions kindred to those which might be felt by a stranger who for the first time visits Independence Hall in Philadelphia. Great are the changes not only in South America, but throughout the whole world, which have taken place since the first deliberative assembly met under the lowly roof of the humble

building which patriotic pride is preserving. The men who gathered here came across the pampas, the snowy mountains of the West, and through the hot tropical jungles, enduring such hardships in travel as none in this generation is called upon to undergo. Life in these regions a hundred years ago had in it no touch of luxury; the conditions were even sterner than in the great Republic of the North. The heroism displayed by the patriots who met at Tucumán was not less than that displayed by the men who had gathered for the same purpose in Philadelphia in 1776.

It is possible, however, for a traveler to surfeit himself with sight-seeing. Too much of anything palls. There comes a time in European travel—unless you have great endurance—when the sight of a cathedral disgusts, and the thought of an art-gallery provokes a yawn. After having spent half an hour in cudgeling from the dark chambers of memory what little I knew of South American history, I began to feel exhaustion. Strained by this form of mental exercise, I resolved that I would follow the advice of Antonio, who informed me that he knew a brickyard in the outskirts of the city where there were butterflies—*mariposas*—in abundance. He had been examining my butterfly-net, which I had left on the seat of the fiacre, while I was exploring the Casa Historica. "Very well, then, good Antonio, we will go to the outskirts, stopping on the way to see anything which may be of interest." We halted at two of the churches, which I entered, but, not having letters of introduction to the Roman Catholic bishop of the diocese, failed to detect anything which was profoundly interesting in their interiors, though no doubt with a competent guide, such as a bishop might be, the tourist could obtain some satisfaction by a visit to these old

edifices. I have no doubt that each one of them has a story to tell, which, however, is not revealed by gilded Madonnas and altar furniture, which appears to be all that is visible. I am not much interested in such things, and if I wish to see them, can see them better at home in the factory which is run by my Italian friend who makes the reproductions of the bones of the Diplodocus for me, and who, as a side issue, runs a shop in which he sells virgins and apostles used to decorate the sanctuaries of the faithful. From appearances the making of plaster of Paris images must be a good business in South America for the enterprising Italians who have it in hand. Two days afterwards, on Sunday, I witnessed a solemn religious procession, in which one of these gilded images of the Virgin covered by a canopy was paraded through the streets borne on the shoulders of men, preceded and followed by ecclesiastics and great numbers of people with bared heads, while the military had turned out, and bands played, and there was a general sensation throughout the town. This kind of mummery is characteristic to some extent of Spain, as it used also formerly to be of Italy and France. Its perpetuation in South America is interesting, as showing the survival of curious religious customs, which have become obsolete in other parts of the world with the advance of knowledge.

Antonio's brickyard, although it was full of thistles, the blossoms of which the butterflies frequent, did not yield as many specimens as an adjoining alfalfa-field, which was in bloom. But it did yield me a very beautiful view of the Cordilleras, and it was these which I had come to Tucumán to see. Alas! however, during all the days that I was there the obstinate clouds refused to roll away from the summits, and the deep purple slopes

were the most that I generally saw. Now and then, as the clouds twisted about higher up, an aggravating and unsatisfying glimpse of peaks and pinnacles was obtained. Early one morning, about four o'clock, upon waking and looking toward the west, I caught a glimpse of the more distant summits; but it quickly vanished. For weeks at a time the great Andean uplifts are wrapped in fog. In consequence of this there is wonderful vegetation upon the lower slopes. Antonio drove me over by a very rough road, full of ruts, to the edge of the tropical forest, which comes down to meet the clearings in which sugar-canes grow. It was only a glimpse I had of a world in which I would like to have spent weeks. What I saw reminded me of the forest-clad mountains about Rio de Janeiro—the same splendid growths of huge umbrageous trees; the same intermingling of genera and species; the same wealth of epiphytic plants.

It was dinner-time and already dark when Antonio brought me back at the end of my first day's experience in Tucumán. I was glad to retreat to my bath-tub, and at an early hour to "woo the drowsy god," safely ensconced under the cover of the mosquito-net, which I took pains to adjust in such a manner as to prevent attacks by *Stegomya*, that insidious dipteron, which conveys the germs of yellow fever. It had not been reassuring at dinner to have the head-waiter inform me that there were a good many cases of vomito in town.

On the morning of the following day, at an early hour, I was driven by Antonio into the country. We went first to the *Aguas Corrientes*, the water-works, where Antonio had informed me that I would see something, and have a chance to make a good collection of the small creatures which I wished to obtain. The

result of the expedition was not wholly satisfactory so far as the number of specimens was concerned. I had an opportunity, however, to observe some things which were not devoid of interest. A great swarm of grasshoppers were at work in a field through which I rambled. The *langostos*, as the natives call them, were fully mature, and were busy devouring the herbage. The day was quite still, and it was a novel thing to hear the sound which they produced as they fed upon the grasses and foliage. The working of thousands upon thousands of small jaws and the rustling of wings, and the stir they made as they crawled over the ground, filled the air with a low but continuous murmur, unlike anything else I have heard. It became impressive as evidence of the fact that so small and insignificant a thing as a grasshopper may indeed become "a burden," and a great burden, too, to the land. The species (*Schistocerca paranensis*) is at times a veritable scourge, as great as that of the locusts of the Orient, even more so than the common *Melanoplus spretus*, the Rocky Mountain Locust, to which it is not distantly related. The insects were being greedily devoured by birds, and I noted that the Guira was doing its part in destroying them. By the roadside I had a good opportunity to examine the nest of an Oven-bird (*Furnarius rufus*). It was built low down on the branch of a tree, so that by standing up in the carriage I could get a very good view of it. I had seen the birds on the grounds of the Observatory at La Plata, and had often observed their nests at a distance, but here was a chance to carefully study one near at hand. The structure is almost globular in outline, built of clay, about a foot in diameter, with an entrance at one side. It is said that this entrance is always placed by the bird toward the rising sun.

Whether this is true in all cases it is, of course, impossible for me to affirm, but it was certainly true in the case of the nest which I examined. I note, however, that Hudson, who ought to know, says that the opening is always made on that side of the nest from which danger might be apprehended. Inside the nest is divided into two compartments, a small ante-chamber and a larger inner chamber, the entrance to which is higher up than the outer entrance, so that it cannot well be reached from the outer entrance with the fingers. The bird is very common in the Province of Buenos Aires and elsewhere; and there are a number of other species of the same genus in other parts of South America which have similar habits. The bird is known by the common people under the name of *el Hornero*, "the Baker," because of the oven-like structure which it builds. Antonio said to me: "*El Hornero es el mas inteligente de todos los pajaros; es arquitecto.*" There is a great deal of folk-lore and tradition in reference to the Oven-bird current throughout Argentina. The birds are never molested, and it is regarded as a sign of good luck to have the Hornero build its nest in proximity to a house. The bird in size is a little smaller than the common robin of our North American lawns, the plumage of its back, tail, and wings bright reddish brown, the breast paler in color. It may frequently be seen running and hopping about on pathways in gardens.

The reservoirs and pumping stations at the water-works did not interest me as much as my *cochero* thought they would. I have seen in my time more impressive establishments. Butterflies of various species were reasonably common, but I found the heat so oppressive, that, after I had spent an hour or two chasing and collecting insects, I was ready to seek other

pastures. We drove at my command to the river—*el rio*. I had anticipated from the map that I would find myself on the banks of a considerable stream. In the rainy season there was every evidence that it must be a great body of water which flows down through its bed; but to my horror, when I arrived, where I had expected to see a broad shining river, I discovered nothing but cobblestones and stretches of sand in which dwarfed willows were growing; through the middle of the channel there flowed a highly malodorous stream of sewage about four feet wide, from which I fled incontinently. The carcasses of dead animals had been apparently hauled out of town and deposited along the bed of the river, there to decay, and ultimately to be washed away by freshets, which fill the channel in the rainy season. *El rio* left upon me no memories save that of its extreme putridity. The sanitary condition of Tucumán would be improved by resorting to some more modern method of disposing of the sewage and the carcasses of dead horses and dogs, which are now left to fester under a torrid sun.

The Province of Tucumán is the center of the sugar industry of Argentina. Under a protective tariff the business has increased greatly in recent years. The area under cultivation has grown since 1872, when it was 2453 hectares, to 72,000 hectares in 1910, of which 62,500—equal to about 155,000 acres—were planted in the immediate vicinity of Tucumán. The level plain in which Tucumán is located is criss-crossed in various directions by railways, to which the canes are brought when ripe and transported to the factories, where the whole process of making sugar is completed, from the crushing of the canes by powerful machinery, thereby extracting the sap, to the final process of refining.

German and French capital and brains have been utilized to bring about the greatest economy in manufacture. A number of the establishments are truly impressive in their size and the perfection of their equipment. To find here within sight of the Andes great establishments covering an area as large as is covered by some of the larger steel-mills in the United States, devoted to the production of sugar, was to me at first sight a matter of astonishment. I had the pleasure of meeting several German chemists, who are charged with the conduct of one of these great concerns. I found them to be men of scientific training, thorough masters of the subject. While the industry has assumed large proportions, the product at the present time is only about equal to the domestic demand, and Argentina has not yet come to the point where it can export sugar profitably and in quantity. Not all of the refining is done on the ground at Tucumán. A certain proportion of the raw sugar is shipped to Rosario, where there are extensive refineries.

The population of Tucumán reveals a considerable infusion of Indian blood, much more than is the case in Buenos Aires. Not a few of the people I saw were evidently pure-blooded Indians. One old woman, who daily sat at the entrance of the hotel where I took my luncheon and dinner, told me with evident pride that she was an Indian. She was engaged in selling cheap embroideries of native workmanship. I saw many others whose features indicated that they belonged to the same race. Some of the children and girls were decidedly pretty. As a class these people did not impress me as being very robust, and some of them appeared to be more or less under-sized and under-fed. Pulmonary disease is reported to be very prevalent

among them, and likewise syphilis. The latter disease is very prevalent in South America, and according to the opinion of some learned authors the disease was originally imported into Europe from South America. Whatever may have been the point of its origin, it is, according to the opinion of those most competent to express themselves upon the subject, unfortunately very common in the southern continent.

The days I had allowed myself for my visit to Tucumán came all too quickly to an end. I would gladly have stayed longer, and pushed on to Salta and Jujuy, and thence invaded Bolivia, and paid a call in passing to a young friend of mine, who has for many years past been sending me the birds and insects of the latter country. But I knew I had gone as far as I dared to go with the time at my command, and therefore on the night of October 20th boarded the train for my return to Buenos Aires. By doing this I was enabled to see by the light of day that part of the country through which I had passed in the night on coming up. The clear division between the different vegetational zones through which we passed was most interesting. When I awoke on the morning of the 21st we were still in the region of the giant cacti and the thorny undergrowths of the semi-arid belt. We soon passed beyond this into a tract which still retains much of the primitive vegetation of the pampas. It was characterized by growths of tall, harsh grasses, growing in tufts, with bare open spaces between them. Some of these spots between the grass-tufts were filled with blooming plants of different species, among them I was delighted to see the scarlet verbena blossoming in a way which would delight the heart of a florist at home. Wide patches of the soil were all ablaze with the brilliant red of this

beautiful flower. A little farther along between the railway stations known as Pinta and Selva there occurred palms and palmettos, scattered in clumps among the rank grasses, which covered the ground.

In the neighborhood of Palacios I observed that the land for leagues was covered with tall ant-hills, from eighteen inches to two feet in height. There were literally millions of them crowded together in such proximity to each other that they seemed to occupy almost the entire surface. I should much have liked

Fig. 27—Caranchо. ½ nat. size.

to have given them a near inspection. The ants of the tropics have had an important part in the past in forming the soil, having performed a service analogous to that which has been rendered in the temperate regions of the north by the earth-worms.

Everywhere during the long ride I took notice of the fact that birds seemed to be numerous. The nests of the Hornero were frequently seen upon the telegraph-poles beside the tracks. Hawks and burrowing owls were common. I saw a number of specimens of the Caranchо, (*Polyborus tharus*) or Caracara, as it is called in Central America, and the northern parts of South

America. This most interesting bird is said to be a scavenger, and to prey upon carrion, but, while it may do so when pressed by great hunger, it is claimed by those who have most closely studied its habits that it generally feeds upon the weak and the wounded, whether birds or mammals. It is the torment of the hunter, from whom it snatches the birds which he may have brought down before he is able to retrieve them. Hudson devotes many pages to accounts of the habits of this rather fine-looking hawk and I was very glad to see it in its native haunts.

After leaving Selva the land became more and more cultivated, until at Valdez we reached a region, which is one of the garden-spots of the world. Finer fields of wheat and clover, of flax and maize, are not to be seen anywhere upon the globe. Shortly after leaving Valdez the night came on, and the next morning I found myself in Buenos Aires ready for breakfast, and glad soon afterwards to meet some of my friends, who called upon me, and congratulated me upon my safe return from my little excursion, in which I had in one way or another covered nearly fifteen hundred miles of travel.

CHAPTER XIX

LAST DAYS IN ARGENTINA

"All places that the eye of heaven visits
Are to a wise man ports and happy havens."
Shakespeare.

THE few days which remained before beginning my voyage to the north were partly consumed by visits to La P ata, where I renewed my acquaintance with my friends, and looked after matters which required my personal attention. I was glad to meet Dr. Hussey, who had returned from his expedition to Brazil, and was able to sympathize with him, as he told me of the unsuccessful results of the undertaking. Had I not myself, in 1887, gone all the way to Japan on a similar errand, and failed?

The time which was not given to business and social duties was devoted to sight-seeing in Buenos Aires. The capitol, the various parks, the cemeteries, the latter remarkable because of the many noble monuments and finely executed pieces of statuary found there, were visited. A certain amount of time was spent in endeavoring to pick up souvenirs. As at Bahia, so in Buenos Aires, I found this difficult. While there was displayed in the shops an abundance of beautiful silverware, bronzes, glassware, porcelain, and *articles de luxe*, which were at once useful and attractive to the eye, all of these were things made in Europe or

Monument of San Martin, Buenos Aires.

A Glimpse into the Cemeterio del Norte, Buenos Aires.

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North America, and could be purchased far more cheaply in Pittsburgh, or even in New York. A friend bent upon the same errand, who had the same thought, informed me that all which he had succeeded in finding, which in any sense might be regarded as characteristic of the country, and therefore fit to be souvenirs of a visit, were photographs, maté-gourds, armadillo-baskets, and jaguar-skins. He had discovered a place where these things were for sale, and he guided me to the spot. The poor little armadillos, small successors of the huge glyptodons and other allied beasts which formerly tenanted the pampas, are being somewhat rapidly exterminated, and are sold in the markets as food. There is not much flesh on an armadillo. The favorite method of cooking them is to stuff them with bread-crumbs and roast them. The fat imparts a certain richness to the bread-crumbs, but to eat roasted armadillo is very much like eating the stuffing of a bony and fleshless turkey without getting any of the turkey. The most curious use to which these poor creatures are put is to convert their carapaces into baskets. The mouth is opened and the end of the tail is inserted into it, thus forming the handle of the

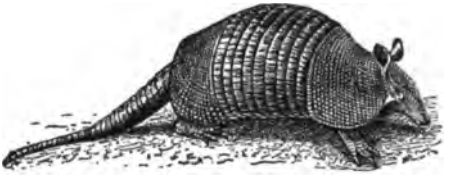

Fig. 28.—Nine-banded Armadillo. ⅛ nat. size.

Fig. 29.—Armadillo Basket.

basket, while the hollow carapace serves as a receptacle. The carapace is lined with silk. I bought several as souvenirs. In a shop on the Avenida de Mayo I found a few specimens of Paraguayan lace, which are rather pretty. The lace is made by the Indians. While the designs are artistic, the fabric does not appear to be very durable. The lace is made of thread spun in Europe.

On the evening of October 24th I repaired according to invitation to the Jockey Club, where I had the honor of being the guest at a banquet given by the University of La Plata, at which the Rector of the University of Buenos Aires, the Deans of the Faculties, and the leading professors of both institutions were present, as well as the Ministry of the Province of Buenos Aires. The banquet was given in the Empire-Room of the Club, said to be the most beautiful room of its kind in the city, and I very much doubt whether in any club in any part of the world there is a more beautiful banqueting chamber than this. It is circular in form, of large dimensions. The dome surmounting it is supported on tall pilasters, and is decorated with beautiful allegorical designs executed by French artists. The banquet-table extends around the entire room in the form of a hollow circle, the central space being reserved for floral displays. Dr. Joaquin V. Gonzales, the Rector of the University of La Plata, presided. Being seated at his right hand, I found at my right hand Dr. Eufemio Uballes, the Rector of the University of Buenos Aires. Sixty gentlemen were present. It certainly was a very distinguished honor which in the kindness of their hearts these learned and eminent men accorded to me, and I accepted it as a tribute of good-will to the Founder of the Institute, whom I had the honor of

representing, and to my own country. Dr. Gonzales after dinner rose and made a very beautiful and eloquent address, in which he spoke gratefully of the generosity of Mr. Carnegie, whose health he proposed, as well as that of his representative. He alluded to the bonds of sincere amity which exist between Argentina and the great Republic of the North, from which the guest of the evening had come. It was a pleasure for the writer to acknowledge with heartfelt gratitude the many distinguished courtesies which had been extended to him during his brief stay in the country, and his appreciation of the hospitality which he had received, destined to leave an indelible impression upon his memory, and cause him always to think of the people of Argentina as his friends. The fact that the constitution of Argentina is identical with that of the United States, that its government is founded upon the same principles which were enunciated by those who framed the organic law of the Republic of the North, was alluded to; and on behalf of the scientific men and educators of my own land, I ventured to express my appreciation of what I had observed of the efforts which are being made by men of learning and of science in the great Republic of the South to advance knowledge, to train men for the highest usefulness, and to hasten the coming of that good time foretold by the seer, when "swords shall be beaten into ploughshares and spears converted into pruning-hooks." As to the relations which subsist between the two republics, I ventured to express the confident belief that these would forever be relations of fraternity and of mutual helpfulness. "We of the North and you of the South are all of us Americans, and though the Pole-star lights our northern sky, and the Southern

Cross sheds its radiance over your fair land, the heavens in which they shine unite to form but one unbroken sphere from which light, the gift of Him who is 'the Father of lights,' is poured upon all the sons of men. 'If we walk in the light . . . we have fellowship one with another' and error and misconception pass away. National misunderstandings and antagonisms are always the result of ignorance. When the nations come to understand each other, as do the gentlemen gathered about this table, there will be no occasion for ill-will."

At the conclusion of the festivities I had an opportunity to take those who were present by the hand and to exchange hearty farewell greetings with them.

In passing it may be observed that the Jockey Club is a power in Argentina. It is composed of the leading men of the country, one of the indispensable conditions of membership being citizenship. It gathers all the great land-owners into its ranks, and the agricultural interests of the nation, which are most important, are attended to and in various ways promoted by the Club. It is said that the Jockey Club practically rules Argentina, and that no measure of state can succeed unless approved by this influential organization, made up of the leaders of public opinion throughout the land. The club-house is one of the most luxuriously appointed buildings of its kind in existence. One of its beautiful architectural features is a staircase of Argentinian onyx leading from the vestibule to the second floor.

It was a matter of regret to me that my brief stay prevented me from visiting certain localities which I have always fancied that I should like to see. The Argentina with which the tourist ordinarily becomes acquainted is the Argentina immediately adjacent to

The Stairway at the Entrance of the Jockey Club, Buenos Aires.

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the Capital, a region which the reader by this time realizes is interminably flat. Very different from this is the western country traversed by the Andean Alps. The loftiest peak is that of Aconcagua, which rises more than twenty-three thousand feet into the air. Several of my friends in the Academy of Sciences of La Plata have devoted a great deal of time to the systematic exploration of Aconcagua, and one of them presented me with an extensive collection of photographic views of this noble mountain which he made a couple of years ago. There are in the southern Andes scores of other peaks, scarcely less impressive than Aconcagua, which remain to be conquered by the members of some future Alpine Club, which awaits organization in Argentina. There is a whole world of as yet unseen wonders to be investigated in the southern portions of the cordilleran ranges. Not only the mountain-climber and the artist, but the geologist and the mineralogist, have still before them a rich field in which to exert their powers in this territory, which remains almost virgin soil for the explorer. I should have liked very much to have visited the region of the Strait of Magellan, which, richly dowered with fiords, glaciers, and snow-peaks, rivals Norway in the magnificence of its scenery. But even more than all these would I have liked to have seen the Falls of the Iguassú. This mighty cataract, far exceeding in size and height our own Niagara, is one of the wonders of the world, which has as yet been visited by but few persons. I made diligent inquiry to ascertain whether it would be possible for me to penetrate so far and return within a reasonable length of time, but discovered that in order to make the journey at least three weeks would be required, and therefore abandoned the thought of the undertaking.

The Falls of the Iguassú are located in the midst of dense tropical forests at the eastern border of the central lowlands, where the river makes its final bold leap from the eastern highlands, about twelve miles from its point of junction with the Alta Paraná, and near the point where the States of Brazil, Paraguay, and Argentina come together. The Iguassú takes its rise in the Province of Santa Catharina in Brazil, not more than thirty miles from the Atlantic coast. The waters, which begin their journey there, flow westward and southward, and only again find rest in the ocean after they have gone two thousand miles from their source. The river just before reaching the cataract pursues a very devious course. The fall is divided into two main portions by a large island. The cataract on the Brazilian side descends by an unbroken leap of about two hundred and thirty feet. The cataract on the Argentinian side descends by two leaps, each over a hundred feet in height, the total fall at this point being about two hundred and ten feet. The fall on the Brazilian side has the form of a horseshoe, like that at Niagara. But between the large Brazilian and the great Argentine falls there are a number of smaller falls through which the water spills over the cliff between small islands. In the dry season there is a succession of cataracts presented to view from the Brazilian side of the river; but, when the stream is in flood, these small dividing islets are submerged, and the whole face of the high wall of rock is one immense torrent, save where it is broken by the great central island. The total contour of the fall is about ten thousand feet, or nearly two miles in length, and at the lowest point the fall is forty feet higher than Niagara. Below the fall the stream suddenly narrows, and the tremendous dis-

Aconcagua.

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charge of water passes away through a gorge about four hundred feet wide, to which the Indians have given the name *El Golfo del Diabolo*, in comparison with which it is said that the Whirlpool Rapids below Niagara are a very tame little affair. Between low water in the dry season and high water in the rainy season there is a difference of one hundred and forty feet in the depth of the stream passing through the Devil's Gulf. The thunder of the cataract is heard for miles; the cloud of mist which rises above it is a landmark visible for many leagues.

Access to the spot is now obtained by going either by boat or rail to Corrientes, thence by steamer up the Alta Paraná to the junction of the Rio Iguassú with the former river. At this point the tourist must complete the remainder of his journey either on foot or mule-back. The journey in going consumes from twelve to fifteen days, and in returning somewhat less. There is as yet no hotel at the falls for the accommodation of travelers, and those who visit the spot must make arrangements to camp out during their stay. The forests in the neighborhood of the falls are dense, luxuriantly tropical, and the place is said to abound not only with gorgeous butterflies, such as the splendid Morphos, and various species of the genera *Agrias* and *Callithea* (Frontispiece, figs. 1, 6, and 9), but with other insects not so charming to the eye, which make a visit to the falls somewhat of a trial to the "faith and patience of the saints." When discussing the possibility of going to the cataract of the Iguassú, one of my friends, who had been there, said to me: "Don't go. You will be eaten up by bichos." The word *bicho* is used in South America very much as the word *bug* is used in English, to designate all sorts of insect-pests

and crawling vermin. Speaking of *bichos* I am reminded of a tale told me a number of years ago by the wife of a former American Consul in Buenos Aires, who related with laughter her experiences at a somewhat primitive summer-resort, since grown fine and fashionable, at which she and her husband, in its early days, once passed their vacation in the hot months. Flies were exceedingly numerous, and, as she sat down at table, the waiter placed before her a plate of soup in which she counted no less than half a dozen of the odious things. She was properly indignant, and ordered him to bring her another plate of soup without such garniture. He removed the plate and stationing himself where he evidently thought she could not see him, with his back turned towards her, picked the flies out of the soup with his greasy fingers, and then advancing with an air of triumph on his face, smilingly set the plate down again before her, exclaiming as he straightened himself up: "Sopa sin bichos!"—*Soup without bugs!*

The steamer *Vestris* was to make her maiden voyage from Buenos Aires to New York, sailing on the morning of October 26th. I had engaged passage upon her, and accordingly on the evening before sailing we went to the dock, hunted up the chief steward, and arranged to have our effects put into our staterooms and the doors locked, so that at the time of departure in the morning we would not be annoyed by petty cares and anxieties. The last evening was spent at the hotel in the society of friends, who came one after the other to wish us a safe and prosperous voyage.

In the morning we were off betimes, and, as we rode down the Avenida de Mayo, a sturdy fellow, springing out from the sidewalk, began to race alongside of the

vehicle, holding up to view a brass tag, with a number upon it. I knew who he was and what he wished. He was a licensed porter (all persons, even porters, have to be licensed before doing business in Argentina) and he desired to earn a fee for carrying our hand-luggage on board the steamer. I ordered the coachman to let him sit in front with him. Had I not done this, he would have run the two miles to the dock, and claimed the right to carry our things on board. I resolved not to "give him a run for his money," and bade him hop into the rig. This is a common sight in Buenos Aires, and having witnessed it both on going to the trains and to the boat, it banished completely from my mind the thought, that, at least when in Buenos Aires, I was in the sleepy "land of mañana." A man, who on a hot day will run alongside of a fast-trotting horse for two miles for the sake of picking up a small fee at the end of the trip, is certainly not afflicted with laziness.

When we reached the ship we found ourselves surrounded by friends, some of whom had come in from La Plata, others from different parts of Buenos Aires to bid us farewell. There was my witty friend Señor Don Agustin Alvarez, who confided to me aside that he had upon due reflection made a discovery. "We hold it a truth in mathematics," he said, "that the product of two or more factors is the same, no matter how they may be arranged. It is not so in language. I come to say 'Good-by' to you. I put the word *by* after the word *Good*, which in this case is the old Anglo-Saxon word for *God*. I express the hope that God may be *by* or *with* you wherever you go. But were I to prefix the word *by* to the noun— Well! it would be different." There was smiling Dr. Roth, who had been my guide through the swamps of the Paraná and

about the barrancas of Mar del Plata. There was Dr. Walter G. Davis, whom everybody loves for what he is and for what he does. There was my amiable host, Dr. Hussey, who had come to bid Godspeed to his parting guest. There were scores of others, friends who had been made on the outward voyage, or whom we had learned to know since we had come into the land. I confess that after such display of cordiality I felt a little tugging at the heart-strings, even though I knew I was "going home."

At last the bugle sounded. The visitors on board slowly departed, passing in a long stream down the gang-plank. The hawsers which bound her were one by one cast off. Slowly and carefully she was jockeyed in her narrow berth, now going aside, now astern, now creeping this way and that, until at last her prow pointed straight for the open gateway of the dock, when she began majestically to glide away into the broad river, which is the gateway to the ocean. As I looked back Dr. Hussey and Dr. Alvarez were still standing on the pier waving their handkerchiefs.

The morning of the following day found us lying at anchor at Montevideo. The swift Mihanovitch steamer, which had left Buenos Aires eight hours after we had sailed, came gliding into the harbor, and from it were brought to us letters and newspapers sent by friends from whom we had parted the morning before. At Montevideo the passenger-list received a number of recruits. The day was cloudy and rainy and we resolved not to attempt to go ashore. As we looked about us at the busy harbor and the noble city the reflection could not fail to arise that time has wrought wonderful changes here as elsewhere. The story of the metropolis of Uruguay is a long one, full of elements

which are thrilling. The ground before us has had its full baptism of blood; the smooth gray waters of the harbor, dimpled to-day by the rain, have been spattered more than once with shot and shell. Belgium has been styled "the cockpit of Europe," and Uruguay for like reasons may well be called the cockpit of South America.

The fighting began when the Spaniards first attempted to wrest the land from the Indians, who inhabited it. These were the Charruas, a tribe who combined with great personal bravery an instinct for organization and regular resistance, which made them the terror of the whites. For nearly two centuries they held out against the European colonists, who came to regard the region as a bloody land, upon the soil of which it was not well to try to tread. Buenos Aires had been in existence for nearly one hundred and fifty years on the other side of the river before white men succeeded in obtaining a permanent foothold on the opposite north bank. Both Portugal and Spain laid claim to the country. The Portuguese maintained that the territory of Brazil extended to the south as far as the banks of the Rio de la Plata; Spain on the other hand asserted that the whole region as far north as Santos belonged to her. Neither had made any attempt of consequence to occupy the country because of the hostility of the Charruas.

In 1680 the first decisive step was taken by the Portuguese who sent an expedition to the River Plate and commenced a settlement directly opposite Buenos Aires, to which they gave the name of Colonia. The river is too wide at Buenos Aires to see what is going on upon the other side, and the Portuguese therefore had time to begin laying out their town, to erect earth-

works about it, and prepare it for defence, before the Spaniards in Buenos Aires had gotten wind of what was taking place. When at last the Commandant at Buenos Aires received intelligence of what had been done across the river, he gathered a small army and, crossing the stream, overpowered the Portuguese, drove them from the settlement, and razed their defences. Portugal formally protested against this act, and the authorities at Madrid disavowed it, without, however, retracting their claim to the territory north of the river. In 1683 the Portuguese resumed possession of Colonia. Thereafter for many years the place became the center of a great contraband trade with the Spanish colonies on the River Plate. In 1705 war having broken out between Spain and Portugal, the Spanish troops in Buenos Aires were again sent over the river and took possession of Colonia and held it for eleven years until at the end of the war it was restored to the Portuguese by the Treaty of Utrecht.

In 1723 the Portuguese decided upon a further occupation of the country, and seizing the site of Montevideo, began to entrench themselves there. When information of the fact reached Buenos Aires, the Governor dispatched a strong force to the place, compelled the Portuguese to withdraw, took possession of their uncompleted works, strengthened them, and prepared himself to hold the place against all comers. In 1726 the town of Montevideo was laid out and five years afterward it had a population of one thousand souls. In 1730 Maldonado was settled by the Spanish. Soon after this a Portuguese expedition arrived, and made an attempt to dislodge the Spanish, but, fail ng in this, established themselves in what is now the Brazilian State of Rio Grande do Sul. For the next fifty years

The Iguassú Falls.

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the story of Uruguay is the history of constant struggles between the two Powers to gain the mastery of the territory. It was not until the signing of the Treaty of San Ildefonso in 1777 that these conflicts came nominally to an end. By this treaty the power of Spain, which had occupied the land with a great army, reinforced by a powerful fleet, was recognized as extending over the whole of what is now the modern State of Uruguay, the settlement of Colonia was transferred to the Spanish Crown, and Portugal was given the territory on the Atlantic seaboard comprised within the States of Santa Catharina and Rio Grande do Sul, almost as they appear upon the maps of the present time.

From the date of the settlement effected by the Treaty of San Ildefonso, Uruguay began to assume importance as a Spanish province. A considerable influx of Spanish immigrants arrived at Montevideo. Many of these belonged to old and influential Castilian families, and the town put on aristocratic airs, while what our American forefathers designated as the "backwoods," were tenanted by the creole element, partly of mixed blood, a marauding, beef-eating, bellicose swarm of rough-riders and swashbucklers, who carried on a perpetual guerrilla with the Indians and with the Portuguese inhabitants of Rio Grande do Sul, who in turn retaliated in quite as savage a fashion.

In 1806 the English took Buenos Aires and many of the Spanish people fled to Montevideo, where an expedition against the British was organized which resulted in their expulsion from Buenos Aires. In January, 1807, the English sent an expedition by way of the Cape of Good Hope which bombarded Montevideo and took the place by assault with frightful loss of life on both sides. The

attempt of the English to take Buenos Aires failed a little later, and the English then withdrew from Buenos Aires and Montevideo, leaving behind them a lot of merchants who found trade with the natives profitable. This marked the beginning of English commercial relationships with the country which have grown increasingly important with the lapse of years. To tell the story of the civil wars, the revolutions, and conflicts with Argentina, Paraguay, and Brazil which took place during the Nineteenth Century would require many chapters. The land was not free from turmoil during nearly the whole of the last century, and it is only within the last fifteen years that the country has known the blessings of peace. In spite of the turbulence, the restlessness, and the warlike disposition of its people, the land seems to have prospered and Montevideo, as we looked at it from the deck of the steamer while we rode at anchor, seemed, as it is indeed, a beautiful and pleasant city.

One of those who took passage at Montevideo was Señor Don Carlos Blixen, the Minister Plenipotentiary of Uruguay going by way of New York and Washington to represent his country in Venezuela. He was assigned a seat opposite to me at the Captain's table, and we soon discovered that because of early training and tastes we were congenial spirits. Señor Blixen, on his father's side of Scandinavian descent, on his mother's side Spanish and a kinsman of the ex-Empress Eugénie, is a fine linguist, a devoted student of the ancient classics, a lover of nature, and a man who has mingled much with men, and endured hardship and danger as a soldier in the service of his country. He was not the only choice spirit with whom I became acquainted on the voyage. The Captain, wise man, had seated on either side of him two charming ladies. It

fell to my lot to be placed beside the one at the Captain's right. I soon discovered that we had mutual friends in our home-land. To my right was another fair lady, the wife of the First Vice-President of the Bethlehem Steel Company, whose father and mother had belonged to the circle of my friends in youth. Again let me remark that this is a very small world, and, travel where we may, we are certain to find those who know us, or know those by whom we are known. It was a delightful company which assembled for the long voyage which was before us, and those of us who met will never cease to remember it with pleasure.

CHAPTER XX

SÃO PAULO

"Ne care ne feare I how the wind do blow,
Or whether swift I wend or whether slow:
Both slow and swift alike do serve my tourne;
Ne swelling *Neptune* ne lowd-thundring *Jove*
Can chaunge my cheare, or make me ever mourne."

SPENSER, *The Faërie Queene.*

JUST before we docked at Santos I packed a small hand-satchel with such things as I might need during a brief stay on shore, and came on deck with my rain-coat over my arm and the satchel in my hand. "Where are you going?" said the Minister Plenipotentiary. "I am going to take the first train I can catch for São Paulo. I shall spend the afternoon and the evening of to-day in that city, and then to-night I am going by the fast express to Rio de Janeiro, and will rejoin the steamer to-morrow, or next day." "I am going with you, if I may," came the reply. The matter was quickly arranged. His Excellency in a few minutes gathered together the things needed for his trip, and reappeared upon deck. We were the first to go over the side of the ship. We found out that we would have time to draw some money, and also to take an early luncheon, before the train started. We not only did this, but had time to go to the park and have a look at the sloths crawling about in the tree-tops.

By the advice of friends we took our seats on the left-hand side of the railway carriage. We were told that this would enable us to get the best views as we climbed the mountains. The railway for the first few minutes after leaving São Paulo traverses a low swampy plain overgrown with mangroves, and intersected with tidal creeks. Here and there were clumps of various larger tropical trees, some of them in bloom. One species greatly awakened my admiration, but I am not able to identify it. It was a tree from fifteen to twenty-five feet in height, having a pyramidal growth. All of these trees were a glorious mass of large pale lilac blossoms, with darker purple throats. Each blossom appeared to be from three to four inches in diameter across the corolla. The train was moving too rapidly to allow me more than to grasp the singular beauty of these great pyramids of bloom, which here and there rose up out of the surrounding swamps. Some of my botanical friends may perhaps smile at my failure to recognize the genus, but botanizing on a railway train going thirty-five miles an hour is not easy. Ahead of us were the dark verdurous flanks of the mountains, which rise all along the seacoast a few miles from the beach, and reach an elevation of from twenty-five hundred to three thousand feet above the level of the sea. Their tops were covered with dark clouds. We rapidly approached them, and as we came to the foot of a steep spur jutting out into the low-lying plain, we saw that up its ridge went the shining double track of the railway. The locomotive which had drawn us to the foot of the incline was shunted to a side-track, and another was made fast behind to push the train up the slope. We went at the heavy grade slowly, but the snorting of the engine behind us proved that it required

all the energy it could develop in order to overcome the resistance. We rose from the flat swamp lands and found ourselves after a few moments traveling along the side of a deep ravine, below us the railway terminal and the cottages of the operatives clustered about it. On the opposite side the flanks of the mountains were covered with plantations of bananas. Looking backward, we saw the city of Santos, the harbor, the streams which traverse the swamps, all mapped out below us. Overhead were the lowering clouds, gloomy and threatening rain. In every chink and cranny of the rocky walls ferns and mosses were growing, save where the faces of the cuts had been covered with asphalt, no doubt to keep the vegetation from taking hold. Higher and ever higher we rose. Now we ran through a short tunnel and looking down, as we emerged again into the light, we saw that the track was skirting the edge of a steep precipice. We ran through one tunnel after the other; there must have been a dozen of them before we reached the top of the ascent. We crawled around the jutting shoulders of the mountain. We felt the air grow cooler. Wisps of fog began to float below us in the deep green abyss into which we gazed. We saw that we were rising nearer and ever nearer to the great billowing masses of cloud which hung overhead. We came to them. We entered them. It was dark and the air grew clammy. The fog streamed into the windows of the train. The landscape was blotted out of sight. Still upward we went, the engine behind us with quick pulsations beating the time of our skyward march. At last it began to grow lighter. Ahead of us the mists seemed to be becoming thinner. The speed of the train was accelerated. We were beginning to run on more level ground. Presently out of the fog loomed up

a collection of buildings, and we ran into the terminal on the top of the mountain, half a mile higher than Santos, where we had left our shipmates sweltering in the heat. A cool wind from the west began to blow in our faces. The clouds began to disappear. Another locomotive was backed down and attached to the front of the train. We started off at a merry gait, and were presently winding our way across the great upland plateau, upon which the city of São Paulo is seated. It does not take long to make the run from the top of the great mountain wall to the city. The sun came out in splendor. The land is rolling. Most of it has been denuded of its original forest growths. Low scrubby thickets and clumps of second growth prevail. The soil is red. The vegetation is very different from that of the tidal plain which we had traversed as we came out of Santos. Everywhere there appeared fields in which cattle and horses were grazing. An occasional palm served to remind us that we were in the tropics. Had it not been for this, and the curious ant-nests, which appeared upon the trees and the sides of the railway cuts and embankments, I might have thought that I was traveling in the western parts of the Carolinas. Could the blackjack oaks of the Carolinian foothills have been thrown into the picture, the illusion would have been perfect.

We soon began to realize that we were approaching a large city. Standing on a hill to the left we saw a stately building, which I at once recognized as the Palace of Ypiranga. I knew it from pictures which I recalled having seen. This was my destination, and it was to pay my respects to my friend and correspondent of many years, Dr. Hermann von Ihering, the most famous naturalist in Brazil, who is the Custodian of

the noble edifice, that I had planned my trip to São Paulo. The Ypiranga Palace, or Monument, as it is often called, was erected to commemorate the independence of Brazil, and it houses to-day the valuable collections of the Museu Paulista of which Dr. von Ihering is the Director.

We arrived at the imposing railway station on time. The building was a mass of bunting and of flags, among which were many religious emblems. Inquiry elicited the fact that the Roman Catholic bishop had just returned from a visit to Europe, and that the city was preparing to give him a hearty welcome upon his arrival, which would take place a little later in the day. The bishop evidently is a popular person, or else his followers are infected with great zeal for the cause he represents. Our first step was to go to the booking-office and secure sleeping accommodations on the night train for Rio de Janeiro. We were met with the familiar statement: "Lower berths all sold; nothing but uppers left." Inasmuch as neither his Excellency nor I cared to miss our steamer at Rio de Janeiro, and the Captain had not given us positive assurance that he would stay more than the day at Rio, and might sail on the evening of the morrow, we resolved to invest in upper berths. Then we found our way to the nearest hotel, told the landlord to send for an automobile, and to call up Dr. von Ihering at Ypiranga. In a minute or two the landlord announced that Dr. von Ihering "was at the telephone." "Hola! spreche ich mit dem Herrn Dr. von Ihering?" "Ja, wer sind Sie?" "Ich bin der Dr. Holland." "Der Dr. Holland von Pittsburgh?" "Ja, derselbe," and amidst protestations of astonishment at hearing my voice, and discovering that I was in town, my friend quickly told me what directions to give to

the chauffeur to bring us most expeditiously to the Museum, where he told me he would be delighted to await our arrival.

The ride to Ypiranga consumed half an hour. The Palace is built upon the top of an eminence from which there is obtained a view over a wide expanse of country, with the city lying below in the middle distance. The surrounding grounds are laid out with taste, and there were great parterres of beautiful flowers blooming along the walks and driveways, which lead to the entrance of the edifice. Leaving the car with the chauffeur at the outer gate of the grounds we walked toward the building. Not a soul was in sight, and all the doors of the huge pile seemed to be closed. My companion suggested that instead of going straight up to the main entrance, we perhaps would have done better to have asked a man whom we had passed, as we came through the gates, to guide us. I ventured to dissent, saying that from one or the other of the many windows no doubt Dr. von Ihering had commanded some one to look out for us, and that our approach through the grounds had already been noted. "Front doors for me always, Mr. Minister! The Great Teacher, you will recall, had some tart things to say about people who try to get in by back doors and over walls." So we went up the great flight of stone steps, and as we approached the entrance a servant in livery swung it open, bowed, and said, "You are the gentlemen whom the Doctor is expecting, not so?" Our reply being in the affirmative, he bade us enter, and in a moment the Doctor himself came to greet us. It was a delightful meeting. After two men have corresponded with each other for years, and have learned to thus know each other, it is a great pleasure to meet face to face, and to

clasp hands. Of course we desired to see the building and to have a good look at the contents of the various rooms. The first chamber into which we were conducted was a sumptuous apartment one of the chief adornments of which is a great painting representing Dom Pedro I. on the heights of Ypiranga, surrounded by his loyal retainers and adherents, proclaiming the independence of Brazil from Portugal. The story of the separation between the two countries in some respects is like that of the separation which took place between Great Britain and the Thirteen Colonies. The old question of legislation without proper representation lay at the bottom of the conflict. It is true that Portugal had given Brazil representation in the Cortes, but the Cortes did not always wait for the delegates from Brazil to arrive and take part in the sessions. In the spring of 1822, the Cortes proceeded in the absence of the Brazilians to legislate for them in such a manner as to arouse deep resentment. Pedro, the Prince Regent, who had already proclaimed himself "Perpetual Defender and Protector of Brazil," on September 7, 1822, hearing of still further v olent measures which had been adopted by the Cortes, drew his sword, and in the presence of the generals of the army and the officers of the government uttered the memorable words, "Independencia ou Morte!" These words are inscribed under the great painting before which we were standing in the Palace. Not long after this utterance he was proclaimed Constitutional Emperor of Brazil. It is worth remembering that Dom Pedro I., in taking the step he took on September 7, 1822, was in fact only carrying out the advice of his father, the King of Portugal, who had suggested to him that in the event of a separation between Portugal and Brazil

which King John foresaw might occur, rather than have the government fall into strange hands, Pedro had better assume the reins of control himself, and keep the sovereignty of Brazil in the family. It remained in the hands of the house of Braganza until the middle of November, 1889, when the Emperor, Dom Pedro II., was forced to abdicate, and the republic was declared.

From the large salon in which the collection of historical paintings is preserved, we went to the various rooms in which the mineralogical, botanical, zoölogical, ethnological, and archeological collections are arranged. I was particularly interested in the collection of nests of ants, bees, and wasps, which Dr. von Ihering has assembled. These "homes made without hands" are very curious, and display a wonderful diversity in form and interior arrangement. The intelligence manifested by the tiny architects of these structures is most extraordinary. The great assemblage of insects, shells, fishes, reptiles, birds, and mammals deserved for its inspection much more time than we had at our command. We could at best only take a general view of the treasures gathered in the halls of the institution, pausing here and there before those things which were especially interesting, asking questions, and receiving answers. We were impressed with the fact brought out in our conversation with Dr. von Ihering that many forms of wild life are rapidly disappearing. The monkeys are fast becoming extinct. Species which a few years ago were quite common have vanished from the territories in which they abounded. The same thing is true of a number of the other mammalia, and is also true of the birds. Conversation turned upon the Golden Plover, which used in comparatively recent years to be a common bird in the eastern portions of North Amer-

ica, whence in the fall of the year it migrated to the uplands of São Paulo and to the pampas of Argentina. It has become almost totally extinct. Breeding at one time in immen e numbers in the region of Hudson Bay, it passed southward along the Atlantic seaboard and by way of the West Indies to the southern portions of South America. Both on its way south and on its way north, and on the plains where it sought its winter home, it was shot for the table, and to-day has disappeared from the face of the earth almost as completely as the passenger pigeon. A few still survive, but very few. The destruction of living things within the past fifty years has been going on at such a rate, that it is the highest time to seek concerted action on the part of the various governments to stay the slaughter, and conserve what is left. Many of the birds of North America spend the winter in the lands of Central and South America, and it is to the interest of the two Americas that steps should be taken to protect the bird-life of the two continents. The most reprehensible use to which birds are put is as articles of millinery. Brazilian humming-birds are sold as hat-trimmings in the London markets by the hundreds of thousands, and millions of other bright-plumaged birds are annually disposed of in this way, so that whole tribes and races of feathered songsters are almost gone from the face of the globe. The wickedness of this slaughter of the innocents will bring to this world a sad recompense of evil, for the result is a destruction of the balance of nature, and an enormous increase of insect-life. Kill the birds, and the result is a multiplication of insect-pests, which ravage the fields and the orchards. The present high cost of living, of which complaint is being made in all lands, is partly attributable to the

wanton slaughter of the birds, the best friends of the agriculturist.

The sun was sinking toward the west, when we took leave of the genial Director of the Museu Paulista. He walked down with us to the entrance of the grounds, and there bade us farewell. We instructed the chauffeur to drive us into the city and to give us a chance at least to see the exterior of its more notable buildings before the darkness should come on. We had a glimpse of the Municipal Theater, which has recently been erected, and which is not surpassed by any building of its kind in the cities of North America. We saw the various public buildings used by the Government of the State and by the Municipal Authorities; we hurriedly looked at the Law School, the Public Library, the Polytechnic School, and had the location of McKenzie College pointed out to us. The latter institution, which owes its origin and development to the self-denying efforts of philanthropic citizens of the United States of North America, is doing a noble work in providing the means of thorough education for the youth of both sexes in the land. We were driven through long avenues, on either side of which were ranged homes of beauty and comfort. The impression left upon our minds was altogether pleasing. It is "no mean city"—this city of São Paulo—with its thousands of delightful residences, its more than six hundred streets and avenues, its fine public edifices, its handsome parks, and its multitude of shops, warehouses, and manufacturing establishments. At last it began to grow dark. The air was chilly, almost cold. We betook ourselves to the hotel, and had our evening meal.

About nine o'clock we boarded the train which was

to take us to Rio de Janeiro. We were presently under way. The inspection of the upper berths, to the occupancy of which we were apparently doomed, was disheartening. I tried to effect a change, but met with no encouragement from the official to whom I addressed myself. He told me he could do nothing. I made up my mind not to go to bed at all, but pass the night in solitary vigil at an open car window in the corridor. His Excellency disappeared in the direction of the compartment to which he had been assigned. I thought he had retired for the night, but he presently came to me remarking: "Great is diplomacy! I have made a diplomatic stroke, and you can do the same thing. There is an empty sleeping-car just behind the one in which we now are. I discovered that the porter is willing to give me a compartment to myself upon payment to him of five thousand reis. As we have already each of us paid twenty thousand reis for an upper berth, it seems a small matter to spend another five thousand, or an increase of twenty per cent., to get a lower in an unoccupied compartment. Get your things and follow me." "I thank thee, most excellent Minister, for this information. I gladly and at once enroll myself in the *corps diplomatique.*" And so it came to pass that we both obtained what we had despaired of getting—a place in which to sleep, without having underneath us in the lower berth a fellow-mortal, who might drive us to the verge of insanity by snoring through all the long hours of the night.

But I could not sleep. I turned the pillows to the other end of the bed next the window, and placed myself so that I could look out upon the moonlit landscape. I watched the outlines of the hills. I saw the fireflies as they flashed forth in the shadows. I observed the

people who were gathered about the stations, where now and then we stopped; many of them were negroes, or half-breed Indians. All at once I was startled by a terrific noise under my compartment. There was a rapid succession of thundering blows, and crashing, tearing sounds. I quickly turned on the electric light, and pulled the cord which conveys the danger-signal forward to the engine. The train stopped. Men came running back. I told them that underneath the car something had gone wrong. They lowered their lanterns and made an inspection. After a hurried consultation, one of them ran forward to the engine, and came back with a lot of tools. Then they crawled under the car and there was hammering and pounding, resulting finally in their dragging forth a large iron tank, which it appeared had broken loose from its fastenings behind, and had been dragging along, hitting and hammering the ties as we flew over the track. The offending tank was rolled to one side, the men disappeared, and the train went on. I was now wide awake.

I lay and watched the dusky landscape, as it seemed to rush by in the night,—the dark groves, the palm-trees, the open fields in which cattle were grazing, the cottages and farmhouses gleaming white in the moonlight, the distant hills which presently grew nearer, and bolder, and blacker. The train began to wind down into deep dark ravines, where I caught glimpses of the moonlight glittering upon the mirror of quiet pools, or scintillating from the confused waves of swiftly flowing rapids. Toward morning when the flush of dawn already began to creep over the sky, I fell into an uneasy sleep. I was roused by the porter coming to tender me a cup of coffee. The bright sunlight was

streaming in through the windows of the car. I dressed and resumed my contemplation of the fleeting panorama. We were now among the mountains of the eastern coast. The scenery was beautiful, the vegetation in the ravines and on the hills was fascinating. Everywhere there was a wealth of blooming things. Soon to our right we descried the peaks of Tijuca and Corcovado. There was now no doubt that our journey was nearing its end. We presently rolled through the suburbs of Rio de Janeiro, and a little after eight o'clock seated ourselves at breakfast in one of the hotels on the Avenida. We learned that the *Vestris* had just dropped anchor. In less than an hour we began to welcome our fellow-passengers, who had come ashore for the day, and strolled into the hotel.

The morning was spent in making calls, and in attending to the selection of a few photographs, which I found I needed. At the noon-hour I repaired to the hotel on the mountain-slope, and had a most enjoyable luncheon. Then I again ascended Corcovado, and, as the day was almost cloudless, had a better view than it often falls to the lot of the tourist to obtain. I walked down the mountain, collecting butterflies as I descended. They were far more numerous than they had been in the same place five weeks before. When I reached the bottom of the long downward path, I began to feel that I would be more comfortable in my stateroom on the ship, riding far out on the cool waters of the bay. So I hired a boatman, and just as the sun was setting he brought me alongside of the steamer, which I already had come to think of as my home. It was pleasant to be welcomed by the cheery Captain, who was leaning over the rail as I came up the ladder. It was good to get into a bathtub, and efface

the memories of the hot dusty night which had been spent upon the train. It was good to go early to bed, with Sancho Panza saying: "Bien haya el que inventó el sueño!"—*God bless the man who first invented sleep!*

CHAPTER XXI

TRINIDAD

"The sullen passage of thy weary steps
Esteem a foil, wherein thou art to set
The precious jewel of thy home-return."—*Shakespeare.*

EARLY on the morning of the first day of November the anchors came up, and we were taken to the sea-wall at the foot of the Avenida and there made fast. We were told that the ship would not sail until noon. An automobile was therefore brought into requisition, and a jolly party, made up of little people and their elders, the latter forming part of the company at the Captain's table, went under the guidance of the writer for a short excursion through the city. We drove out to the end of the Avenida Beira. We were interested in seeing people being conveyed to the top of Sugar Loaf Mountain in a basket-car hanging from a steel cable, stretched from sea-level to the summit, just as people are conveyed to the top of The Rock at Gibraltar. We took a peep at the Botanical Gardens. We traversed various streets of the city, looking at the sights, and finally came back to the Avenida, at the lower end of which we saw the blue and white funnels of our floating hotel. The youngsters having declared themselves to be thirsty, it was proposed that we all should indulge in the mild luxury of *caldo da cana*. This is simply the freshly expressed juice of sugar-cane. In the fruit-shop which we entered, there was a small mountain of canes

Port of Spain, Trinidad.

(From a water-color sketch by the author.)

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piled up beside a crushing-mill driven by an electric motor. A bunch of canes was quickly sent through the rollers, the juice was collected in a receptacle beneath, strained, emptied into a large glass pitcher, and then served to us in tall tumblers, into which small lumps of ice had first been put. The juice has a very pale greenish tint. The juvenile members of the party unqualifiedly pronounced the beverage "good," and called for more, as also did their elders, who at first seemed to be dubious, and inclined to question the statement of the writer that the fluid is palatable, and far less likely to be injurious to the stomach than in the condensed form of candy. We purchased a basket of tropical fruits, custard-apples, sapodillas, papaws, avocado-pears, and oranges. The best oranges produced in South America are said to be grown at Bahia. The seedless orange, now so extensively cultivated in the United States, originated in the neighborhood of that place, and the first plants were imported thence into North America. Leaving the fruit-store the ladies of the party did a little shopping, after which we found our way back to the steamer, which soon began to plow her way out into the ocean.

We called at Bahia two days later, arriving about ten o'clock at night. We sailed early on the morning of the following day. None of the passengers went on shore.

The voyage from Bahia to Trinidad was said to be likely to consume from eight to nine days. We therefore settled down to the routine of an easy life on board, the program of which was made up of eating, sleeping, bathing in the big canvas tank, conversation, reading, games on the deck during the daytime, whist, music, and dancing at night. We kept nearer the coast, as we came up, than we had as we went down on the outward

voyage. From the time we left Rio de Janeiro until we had passed Pernambuco the land was always in sight. Sometimes we were quite close to it, and with the aid of our glasses could observe what was taking place on shore. The mountain scenery for some distance north of Rio de Janeiro was very attractive. Farther north the mountains were replaced by low hills. The whole coast is skirted by coral-reefs, over which the white surf tumbled. Back of the still water behind the reefs were broad, sandy beaches. Along the shore are endless groves of coco-palms. Under the shadow of these we could see the thatched huts of the fishermen, sometimes closely clustered together and forming extensive villages. Now and then a lighthouse appeared, but the lighthouses on this coast are not numerous, and but very few of them are powerfully equipped.

Fishermen were constantly seen in the daytime plying their calling upon the water. We passed a number of them below Pernambuco far out from the shore, and near enough to hail them from the deck. The craft they use are exceedingly primitive. They are known by the native name of "xangadas." In reality they are simply rafts, not more than from twelve to fourteen feet long and from five to six feet wide, made of bamboos and other light woods, the pieces lashed and clamped together. They carry a shoulder-of-mutton sail raised on a jury-mast, which is usually a stout bamboo pole, sunk in a socket, out of which it can be jerked in an instant, if necessary. Both fore and aft there is a rude seat, or bench, made of bamboo, with rowlocks at the ends. The vessels carry a couple of sweeps, which may be used as oars or rudders. Just aft of the mast, lashed in place, is always a barrel, which serves as hold for cargo, and into which the fish are put as they are

taken. The rafts have no rail and seemed always to be awash, and the waves, as they were crossed, sent their spray over the sail and over the men, of whom each craft carried two. The xangadas are practically unsinkable, and their occupants, who seemed to be jolly, round-faced negroes, appeared not to fear the dangers of the deep, but to be having a nice cool time out on the water. The sea, however, was only moderately stirred by the winds as we came up the coast. There must be times when no one would dare to venture forth upon it in such flimsy constructions as these rafts. That the ocean is able to take, and does take, toll of the shipping in these waters, was testified by the sight here and there upon the reefs of the wrecks of sailing vessels and of steamers, from the rotting and rusting remains of which the green sea-weeds flaunted their growths.

We did not call at Pernambuco, but our steamer passed close enough to the shore to enable us to get a very good view of the water-front of the city. The roadstead is quite open to the sea, and only recently has the construction of breakwaters and docks been begun. There appear to be many large warehouses in the place, and some manufacturing plants, from the tall chimneys of which clouds of black smoke were streaming away before the south-wind. A large steamer put out of the harbor just ahead of us and stood away to the northeast, evidently bound toward Europe. There is a very extensive trade carried on at Pernambuco, the principal exports being sugar, molasses, and cotton, in the order named.

After rounding Cape St. Roque we stood away to the northwest, heading directly for Trinidad. From this time forth we were out of sight of land until shortly before we dropped anchor in the harbor of Port of Spain.

Our course lay so far out at sea that we did not detect the fact that we were crossing the mouth of the Amazon, which like the Rio de la Plata discharges a vast mass of muddy fresh water into the ocean. For the same reason we detected little of the influence of the Orinoco upon the sea, into which it pours its waves, except a certain dulling of the tone of the blues. Each day was like the other, but the temperature on board was never distressingly hot. The mercury during the entire voyage never rose much above 80° Fahrenheit in the hottest part of the day, and at night generally fell to about 75°, or even lower. The rapid movement of the steamer created a breeze on deck, so that it was always possible to find places in which to sit and read and chat in comfort. The cabins were unusually well ventilated. The one I occupied had two large windows, which I kept open all night. Sleep under these conditions was possible.

We were off the coast of French Guiana on November 5th, the day upon which, had we been at home, we would have taken part in electing a President of the United States. A ballot-box was improvised from a cracker-box, inspectors and judges of election were appointed, and all citizens of the United States, including the ladies, were requested to repair to the palm-garden on the after-deck at the time of the afternoon tea, and there cast their ballots. The result of the balloting showed that the respective candidates had received the following votes:

Woodrow Wilson . . .	24
Theodore Roosevelt . . .	18
William H. Taft . . .	12
Total	54

On the morning of the following day the Captain kindly undertook to get into wireless communication with Georgetown, the capital of British Guiana, and we learned that the people of the United States of North America had settled matters very much in the same way we had, revealing the fact that the company on board who claimed American citizenship quite fairly represented the general sentiment of the nation.

On November 10th it was announced that, if all went well, we would early on the morrow reach Port of Spain. About ten o'clock at night I noticed great banks of clouds to the south and west in which lightning was playing. While I was watching these one of the officers came to the rail and stood and chatted with me for a while. He told me that about midnight we ought to "pick up" the light at the eastern end of the island of Trinidad. I resolved not to turn in until I had seen it. After a while the thunderstorm in the west died down and the lightning ceased to flash. The sky was very dark and overhung with low clouds. A little before twelve on the under surface of the clouds I saw a faint glow, which instantly vanished. I felt that it could not have been caused by a flash of lightning, because it was too faint and not widely enough diffused. I fixed my eyes upon the spot and saw that the faint glow was repeated. "That is no doubt the reflection of the flash-light of the beacon on the lower surface of the clouds," I said to myself. I was so sleepy by this time that I resolved to accept the reflection for the substance, and gave up my vigil and went below. Next morning the Captain told me at breakfast that for a long time before the light itself became visible, they had seen its reflection in the sky above the spot where it finally came into view.

At sunrise on the morning of the 11th of November we were steaming into the harbor of Port of Spain. The scenery, the cloud-effects, the wealth of color in sky, on land, on water, produced a charming impression. The luxuriance and density of the vegetation attracted attention even from the deck of the steamer. Sir Frederick Treves, in his charming book, *The Cradle of the Deep*, says of the island:

> Seen across the gulf, Trinidad is an island of a thousand hills, of incessant peaks and ridges, and of a maze of winding valleys. From the sea-margin to the sky-line it is one blaze of green, the green not of grass, but of trees. . . . Here is a very revel of green, clamoring and unrestrained, a "bravery" of green, as the ancients would call it, a green that deepens into blue and purple, or that brightens into tints of old gold and primrose yellow. Here are the dull green of wet moss, the clear green of the parrot's wing, the green tints of old copper, of malachite, of the wild apple, the bronze green of the beetle's back, the dead green of the autumn Nile.

Trinidad was discovered by Christopher Columbus on his third voyage on July 31, 1498. He and his companions had endured great discouragements and hardships. The winds had either been contrary, or had failed them. For a long time they had been becalmed, drifting, always drifting, in that mighty equatorial current which, sweeping up along the northern coast of South America, whirls around in the Gulf of Mexico, and then pours out around the southern tip of Florida, and spreads itself over the North Atlantic to give warmth to the people of Europe, and make their lands habitable. Christopher Columbus knew nothing of all this, however. He really did not know where he was. Drifting, hoping, despairing, at last the cry came from

the lookout aloft that land was in sight. Straining their eyes westward they saw three peaks rising from the sea. They deemed the vision an answer to prayer, for the expedition had been undertaken in the name of The Holy Trinity, and here were three mountains joined in one at their roots rising out of the ocean before them. They called the land "The Island of the Holy Trinity," which is perpetuated in the name it bears to-day. The mountains upon which the eyes of Columbus and his comrades rested are known to-day as "The Three Sisters." They are landmarks for the seaman who enters the Gulf of Paria from the south, by way of the Serpent's Mouth, the narrow strait which separates Trinidad from the Venezuelan mainland. Columbus had become so accustomed to finding islands, that it did not enter into his head that the land he saw to the south was continental in its vastness. He called it Isla Sancta, the Holy Island. That was the first name given to America. Columbus and his shipmates had the misfortune to be caught in the bore, or tidal wave, which to this day rushes through the Serpent's Mouth, and one of the ships lost an anchor in consequence. About fifty years ago an old Spanish anchor was fished up by a dredger near the spot where this mishap is said to have occurred, and to-day it is treasured at the Victoria Institute in Port of Spain, and is shown to visitors as the anchor of the immortal explorer. Perhaps it is,—*Quien sabe?* Columbus did not find gold. The natives were not friendly. The explorer was sick in body and sick at heart. The beauty of the region fascinated him, nevertheless. He likened it in his thoughts to the Garden of Eden, and reported to Queen Isabella that at last he had found Paradise. Like Paradise the island looked on the morning of the 11th

of November, as the sun came up, and I stood and watched the glory of his rising beams flooding the mountains, the hillsides, and the valley.

Columbus never knew that his eyes had rested upon "a new world." The names he gave to many of the places he found did not stick. The Holy Island a few years later was discovered to be a continent, and to it was given the name of an Italian, Amerigo Vespucci, who sailed with Alonso de Ojeda, an old comrade of Columbus, to try to get some of the pearls which the great discoverer in his dispatches had said were to be obtained at Paria. The story of Columbus is in many respects a tragedy. He sowed and other men reaped. But that after all is true of most successful men. The path-finders and leaders rarely profit from their discoveries and exploits. It is generally left to second-rate men who come after them to make the profits.

While I was hurriedly eating my breakfast preparatory to going ashore, my table-steward handed me a cablegram announcing that the home of my younger son had been gladdened by the advent of a little daughter. My companions at table tendered me their congratulations. Like nerves the wires bind the lands together. The whole globe is fast becoming a great sensitive organism. Our loved ones speak to us out of the deeps and across oceans. Nothing is hidden. Individuals and nations commune with each other daily, regardless of the barriers erected by seas and mountains. I have in my custody a letter written in October, 1799, by Alexander von Humboldt from a spot not far from Port of Spain to a friend of his, who lived and died in Pittsburgh. The postage on that letter cost nearly thirty shillings sterling ($7.50), far more than the cablegram which was handed to me at break-

fast, and the friend of Humboldt did not receive it until more than eight months had elapsed after it had been written. It first was carried by a sailing ship to Europe, thence taken to Boston in another sailing ship, then by mail-coach to New York, and then by mail-coach across the Alleghenies until it finally reached the person for whom it was intended. What miracles have been achieved by human ingenuity since Columbus first anchored where we are lying, and more particularly since Alexander von Humboldt came to visit the regions about the Gulf of Paria! By the way, Humboldt on his mother's side was descended from a family bearing the name of Colomb. Some of his biographers claim that he was of the same race as the great Cristofero. However that may be, in a certain sense he was the re-discoverer of South America. He was the first really scientific observer to resort to these lands. His writings quickened interest in them, not from a political and mercenary point of view, but from the standpoint of the student of natural phenomena. All works dealing with the natural sciences relating to South America and published before the day of Humboldt are full of errors and crudities. He was followed by a host of successors, whose training was largely received by communion with nature on the virgin soil of this noble continent. The list is portentous, and includes the names of some of the greatest scientific men of the past eleven decades, such as Bonpland, D'Orbigny, Darwin, Spix, Louis Agassiz, Bates, and Burmeister. One of the greatest of them all, Alfred Russel Wallace, still survives at a green old age, the representative of a generation which has almost entirely passed from the stage.

We went ashore in the Company's launch. As we

approached the landing-stage our attention was called to the fact that several vessels had sunk near the shore, only their masts being visible above the water. Men in small boats were working about them. Inquiry elicited the fact that the day before the place had been visited by a hurricane, and that half a dozen small craft had been swamped along the landing, and some houses unroofed. Those who spoke of the matter did so in a way which seemed to imply that it was quite an ordinary occurrence.

The architecture of Port of Spain is conformed to the requirements of life in a perpetual summer. Everything is open to the air, and devices to shelter from the heat of the sun in the form of broad verandas and awnings built over doors and windows are common features in residences of the better class. The streets and roads are well-paved and clean. The open spaces in the parks look smooth and green like English lawns. The sides of the roads are adorned by trees, many of them of huge size, upon the branches of which grow great colonies of epiphytic plants, bromelias and orchids of various genera. We first drove out to the waterworks. The water from a number of clear mountain-streams is collected in large reservoirs and is then conveyed by pipes into the city. On reaching our destination we alighted from our conveyance and went in and examined the place. An attendant came forward and dipped up some of the sparkling water for us to drink. It seemed to be very pure, but it would have been somewhat more palatable had it been cooler.

The reservoir is located in a deep valley, about which under the shade of great trees cacao-bushes were growing. While we were inspecting the reservoirs the chauffeur had pulled one of the ripe cacao-pods, and

handed it to me as we came out. It was about ten inches long. The cacao (*Theobroma cacao*) is the plant from the seeds of which chocolate is produced. The pod is long, cylindrical, tapering at either end, and fluted. When ripe it is greenish yellow in color striped with dull pink. The bush or small tree, from the branches of which the pods hang singly here and there, loves the shade of deep forests, growing in rich moist soil. In its form it somewhat recalls the papaw (*Asimina triloba*) of the Indiana and Kentucky woodlands, which also loves the shade. Cocoa is one of the staple exports of Trinidad. On our rides both to and from the reservoirs we noticed that ferns, and especially tree-ferns, were not uncommon. Various aroids, belonging to the genera *Philodendron*, *Anthurium*, and their allies, were conspicuous. Liverworts of several genera and species were seen by me as I wandered about in the shady woods in quest of moths, of which I caught a few. In the open spaces by the wayside butterflies were quite numerous. I succeeded in capturing a number of Hesperids and Lycænids. *Didonis biblis* with its black wings margined with vermilion was very common among the bushes and in half-shaded places, while *Anartia jatrophæ* and *Anartia amalthea* literally swarmed in the low grasses and weeds by the wayside. Two species of *Catopsilia* were congregated in damp spots on the road, just as the common Clover-butterfly (*Colias*) gathers in similar places in the summer-time at home.

Fig. 30.—Pod of Cacao. $\frac{1}{6}$ nat. size.

The view of the rich tropical vegetation of the island

which we had obtained in the course of our short ride led us to desire to visit the Botanical Garden, said to be the finest in the West Indies. It has been long in existence, and some parts of it are in reality the native forest, in which no attempt has been made to put a curbing hand upon the forces of nature. An attendant in uniform, with ebony face, seeing me engaged in collecting butterflies soon after I had entered the gate, approached me and with a smile upon his face said: "I shall have to fine you for collecting insects on these grounds." I looked him in the face and said: "Fine a Fellow of the Entomological Society of London for collecting butterflies on English territory? Indeed!" I then handed him a shilling, and said: "Now come and show me where I am likely to find the best specimens." He accepted the shilling with a grin, and thereafter accompanied us and was our willing guide. The first place to which he conducted us was to the top of a small eminence from which we had an extensive view over parts of the town and the wide gulf beyond. That little climb became memorable, not because of the exertion it involved, but because of the oppressive heat. The distance was not great, but the hot, humid atmosphere made it exhausting. After staying a while upon the hill-top seated under a rude arbor and endeavoring to recover a normal temperature, incidentally to collect some interesting specimens of various orders of insects, we slowly descended by a circuitous path under the shadow of the overhanging foliage. There are many noble tropical trees, both native and exotic, in the garden. We were particularly interested in observing the numerous varieties of palms, and the profusion of orchids and bromeliads clustered as parasites upon the branches. Several species of bamboos

formed great clumps, the feathery masses of which contrasted beautifully with the darker and more solid foliage of the great rounded tree-tops which formed the background. One of these growths of bamboo was being cut down and a man was sawing up the joints "to make flower-pots," as he informed us. The joints were five or six inches in diameter, and no doubt may well serve as receptacles for growing plants. Our faithful guide obtained a couple of the things for the use of the ladies, who fancied them, and I took one as a receptacle for paint-brushes, for which it is admirably adapted.

We could have lingered much longer in the Botanical Garden, but there were other places to be seen, and we therefore beat a retreat to our automobile, and went into the town itself. The city has witnessed many vicissitudes since its first settlement by the Spaniards in 1532. For nearly two hundred and fifty years the banner of Spain floated over the island; then there was an attempt by the French to possess it, and finally the English took it, and English it has remained since 1797. The older parts have been remodeled and rebuilt since the days of the early settlement. The streets are laid out at right angles, which was not originally the case. The business portion has a rather seedy and forlorn look. The residential parts occupied by the wealthier classes are attractive, even beautiful. Some of the houses are well built, and the gardens with their wealth of flowering shrubbery and fine trees are charming. After having seen the main thoroughfares, and visited the principal points of interest, we decided that it was time for luncheon. We went to the Queen's Hotel, and fared very well. The fish which was served, and which we were told had come fresh from the sea that morning,

was excellent. Trinidad has in recent years come to be a resort for English gentlemen who are lovers of piscatorial sport. A very readable book has been written by a member of the fraternity, who describes the adventures he had in successive seasons while fishing in the Bocas for tarpon and other denizens of these seas. The devil-fish, that colossal batlike monster, which haunts the reefs, and sometimes towards dusk rises with a great flying leap from the surface of the water, is graphically described by the writer of the volume.

After luncheon we visited the market-place and a number of the shops. Port of Spain is a very cosmopolitan town, as much so as any in the West Indies. We found that many languages are spoken by the people, though English is universally understood. There are many there who still employ Spanish, the *lingua franca* of South America; others speak French. The negroes speak the English of the West Indies with its peculiar drawling accent. There is a lingering suggestion of the old days of slavery in the constant use of the terms "Master" and "My Lady," employed by the blacks in addressing the whites. Multitudes of East Indians, young and old, were encountered. These people retain the garb and the customs of the Orient, from which they have come. One section of Port of Spain is known as "Coolie-town." We encountered "Bombay-wallas" and "Calcutta-wallas" everywhere.

But it was time to be making our way to the landing-stage. We had barely arrived there, when it began to rain as it only rains in the tropics. We huddled together under the narrow roof of the shelter which is provided at the landing-stage. Fortunately the Captain was one of the waiting company, and we felt at ease.

Ships do not sail without their captains. The wind came up and our departure was delayed until the squall had died down. We reached our floating home about three o'clock. As we came out over the bay it was interesting to see perched on the tops of the buoys in the harbor a number of brown pelicans. Man-o-war birds were also numerous, hawking about the stern of the ship.

The glimpse we had of this southernmost of the West Indian islands provoked in our minds a desire to visit it again and make a longer stay. It is well worthy of a protracted sojourn. The roads through the island are said to be good, and there are many places which are full of interest to the student of nature as well as to the lover of the beautiful and curious. We would have liked to have visited the famous Asphalt Lake, we would have enjoyed exploring the Cave, which is haunted by the Guacharo, the *Steatornis steatornis* of ornithologists. This very remarkable bird was first described by Humboldt. It was first found by him near Cumaná and referred by him to the Goatsucker Family, subsequently the bird was found to frequent caverns in other parts of the country, especially Trinidad, where the people called it the "*Diablotin.*" Students since then have very carefully studied its anatomy, and it has been separated from the Goatsucker Family, or *Caprimulgidæ*, and placed in a separate family, the *Steatornithidæ*. The bird, while it possesses many of the characteristics of the Nightjar and Whippoorwill, shows also certain strong affinities to the Owls, and is regarded as perhaps giving evidence pointing to the fact that the Goatsuckers and the Owls may have sprung from a common ancestry, the characteristics of which in part survive in this curious bird. It is about

as large as a crow. It is noctural, slumbering all day in dark caves, whence it issues at dusk, going forth in search of its food which consists of the oily fruits of various tropical trees. In quest of this food it travels enormous distances, being very swift of wing; and one writer, who studied its habits, states that he found in the stomach of a specimen which he obtained at Caripé a

Fig. 31 Guacharo (*Steatornis steatornis*) ½ nat. size.

nut of a tree which he was quite sure does not grow nearer the cavern than eighty leagues, or two hundred and forty miles away. The indigestible seeds are voided upon the floor of the caves in which these birds congregate, and here they sprout up, and being deprived of light, cover the floor of the cave with a curious mass of bleached vegetation like the shoots of potatoes which have sprouted in a cellar. The young birds soon after they are hatched become a mass of animate fat; at this time the Indians resort to the caves and slaughter the young by the thousands, melt the fat in pots at the mouth of the cavern, and preserve it for use both in cooking and in lighting lamps. This fat is said not to

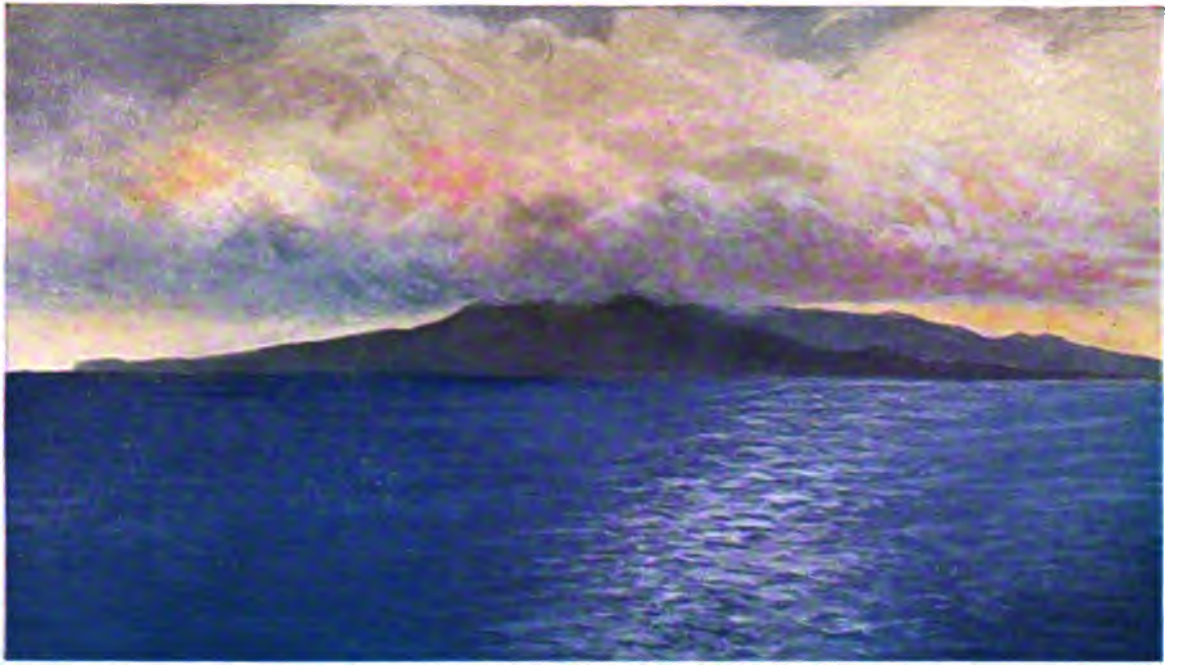
turn rancid, and is capable of being kept for a year or more in limpid purity. Some people say that the squabs are delicate eating. It is, however, reported by others that they have the taste of cockroaches. It is singular that the odor of cockroaches is found in many birds. I have noted it especially in the case of Petrels. A Petrel flew on board the S.S. *Carpathia*, on which I was crossing from the Mediterranean, not very long before her memorable rescue of the shipwrecked passengers of the *Titanic*. The bird was brought to me. I afterwards released it, and it flew away; but for a couple of hours afterwards, though I washed my hands a number of times, I could not get rid of a mild odor of cockroaches which seemed to cling to my fingers after handling the bird.

CHAPTER XXII

THE LESSER ANTILLES

"Where first his drooping sails Columbus furl'd
And sweetly rested in another world,
Amidst the heaven-reflecting ocean, smiles
A constellation of elysian isles,
Fair as Orion when he mounts on high,
Sparkling with midnight splendor from the sky;
They bask beneath the sun's meridian rays,
Where not a shadow breaks the boundless blaze;
The breath of ocean wanders through their vales,
In morning breezes and in evening gales;
Earth from her lap perennial verdure pours,
Ambrosial fruits and amaranthine flowers;
O'er the wild mountains and luxuriant plains,
Nature in all the pomp of beauty reigns."—*Montgomery.*

WE left Port of Spain about four o'clock in the afternoon. The thunderstorm which had passed over the town still clung in the distance about the tops of the mountains. We passed out to sea through the Dragon's Mouths (Las Bocas de Dragos), the triple strait, seeded with jutting islands and towering rocks, which connects the Gulf of Paria on the north with the waters of the Caribbean. The scenery compelled the admiration of the most indifferent. In the blue distance rose the high peaks of Paria, one of them thirty-five hundred feet in height, lofty sentinels on the Venezuelan mainland, which here juts out eastward as a narrow peninsula, forming the northern boundary of



Mount Pelée, Martinique.

(From a water-color sketch by the author.)

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TILDEN FOUNDATIONS.

the gulf. At the prow of the ship we could see how the water is racked as it pours between the islands. Its surface was free from waves, but broken by tide-rips. Many porpoises raced with the ship as she stood out to sea. I strained my eyes to see whether by some lucky chance I might not catch a glimpse of one of the huge devil-fishes which are said now and then toward evening to leap up from the water, but none of these darlings of the deep obliged me by letting me have a peep at him.

A number of additions had been made to our ship's company at Port of Spain. Some of these were to remain with us to the end of the voyage, others were only to bear us company as far as Barbados, where they would reëmbark on vessels going to Europe, or to other parts of the West Indies and South America. Among the latter was an English gentleman, who informed me that he had come out to the West Indies "to escape the beastly winter-climate of London," and that, after having visited in succession all of the Lesser Antilles, it was his purpose to go to Pará and ascend the Amazon as far as possible. He was arrayed in an immaculate suit of white duck, a solar topee, and a formidable monocle, so that it was evident he was fully equipped for life in the tropics.

With a good motor-boat it would be possible to go from Trinidad to Florida by way of the Antilles, sleep on shore every night, and never be out of sight of land for more than an hour or two at any time. The Lesser Antilles, or Caribbees, form a semicircle which extends from near the coast of Trinidad eastward and northward nearly as far as Puerto Rico. The Greater Antilles continue the chain of islands, stretching westward in the direction of Honduras. The Caribbean Sea is thus partially enclosed on the east and the north by a long

succession of islands, large and small, lying like a great wreath upon the blue expanse of ocean. The Caribbees are disposed in two more or less parallel lines, the outer islands on the Atlantic side being generally low, or with but slight elevations upon them; the inner series is composed of islands which are mostly volcanic in their origin and adorned with peaks and high rugged cliffs. With but one or two exceptions, all are covered with luxuriant vegetation from sea-level to the tops of the mountains. Alongside of them are some mighty deeps in the floor of the ocean. If the water were to be drained away from about them they would stand up from the sea-floor as the Himalayas stand up above the plains of India. What the traveler really sees as he journeys among these islands are only the summits of a colossal mountain range jutting up out of the waters. These islands lie along what geologists call a fault in the surface of the earth, which, as it has been cooling and contracting, has been cracked and wrinkled and folded. On such lines the water of the ocean, creeping down into the heated interior, has been converted into steam and volcanoes have been formed. Many of these islands, the summits of which are evidently old volcanic peaks, are quiet enough to-day, save that now and then they are jarred by earthquakes, but nowhere in the world has more awful destruction been wrought since the days of Herculaneum and Pompeii than was brought about by the explosion of Mt. Pelée on Martinique in 1902.

Leaving Trinidad behind us we headed away to the northeast. Tobago was passed during the night. Morning found us at Bridgetown, the port and capital of Barbados, the easternmost of the Caribbees. The only other large vessel in the harbor was a Russian man-of-war. As soon as we had cast anchor, the ship was

surrounded by small boats, each of which carried two boys. As they came alongside they began to clamor for the privilege of showing their skill as divers: "Throw me a penny, master! Watch me dive and get it!" "Throw me a shilling, master! and I will bring it up on the other side of the steamer!" The passengers standing at the rail began to toss small coins into the water. The coin had scarcely left the hand of the thrower, before sixteen or seventeen lithe black bodies disappeared under the water and then came up, the one who had captured the coin displaying it for an instant in his fingers, and then transferring it to his mouth, which served the purpose of a purse. One of their number who was designated as the "deaf fellow" seemed to be particularly expert. All of the boys were negroes, except one, who was a fair-haired English lad. While one of the occupants of a boat was engaged in making his natatorial displays, his comrade managed the craft. Then, when the swimmer became tired he crawled into his boat and took charge of the oars, while the other fellow took his turn in the water. All of them swam with great ease and strength and showed fine muscular development.

Our anchorage was far out. We were to take on seven hundred tons of coal, and accordingly were told that the entire day and evening might be passed upon shore. After breakfast we called a small boat alongside, and soon found ourselves walking up one of the streets of the town, which is said to derive its name from the fact that the first settlers of the spot found there a bridge, which the Indians had built over a small creek discharging its waters into the bay. The first settlement was made at Holetown, a point about seven miles north of Bridgetown on the western side of the island. Here

in 1605 a party of Englishmen on their way to the Spanish Main effected a landing and took possession in the name of their king, the ceremony consisting of setting up a rude wooden cross and carving upon the bark of a tree a declaration that the island was the property of King James. They then sailed away. At that time the only foothold which England had in the New World was this little island and the rocky coast of Newfoundland. Spain, Portugal, France, and Holland claimed everything on this side of the Atlantic. Twenty years passed before a few of these Englishmen accompanied by some of their friends returned, and began a formal settlement at Holetown. They were quickly followed by a party sent out by the Earl of Carlisle, who established themselves in 1628 at Bridgetown, which, because of the better anchorage, soon became the principal port of the island, in fact the only one now resorted to by ocean-going vessels.

Barbados has been continuously in the hands of the English since the days of its first occupation, and is one of the very oldest of the colonial possessions of Great Britain. It has an extreme length of twenty-one miles and an extreme breadth of fourteen miles. It contains an area of one hundred and sixty-three square miles. It has a population of more than two hundred thousand, and therefore, with the exception of Manhattan Island, is the most densely inhabited island on the face of the globe. The population is composed principally of negroes.

The style of architecture of the older mansions is Colonial, recalling the old manor-houses of Virginia and the Carolinas. In this connection it is worth remembering that the only time George Washington left the soil of North America was on the occasion of a

visit to some of these hospitable mansions, when he accompanied his invalid brother to the South. The streets of the business portion of Bridgetown are filled with buildings of a substantial character built from coral-rock. There is an air of English solidity about the banks and warehouses. The residential portions of the city contain many pleasant homes surrounded by beautiful gardens full of blooming shrubs and flowers. Fine trees shade most of the thoroughfares. Among the shade-trees I noticed some magnificent specimens of the mahogany-tree (*Swietenia*) and the silk-cottonwood (*Bombax ceiba*), the latter with their trunks surrounded by wide and thin buttresses of wood which nature provides to serve the purpose of flying-arches with which to support their mighty columns.

Taking a vehicle we started out on a tour of exploration. We visited the markets. Naturalists generally find the vegetable and fish-markets in strange lands instructive. My friends, Dr. D. Starr Jordan and Dr. C. H. Eigenmann, who are two of the leading ichthyologists of the world, have told me that they make it a point to visit the fish-markets on their travels, and many species new to science have been found by them in fish-stalls, by the former in the Orient, by the latter in South America. The venders of fish in the West Indian Islands have a large number of fine species of food-fishes at their command. Spanish mackerel, snappers of various species, pompanos, and flying-fish were on sale at Bridgetown. In the fruit-stalls were various kinds of tropical vegetables and fruits which interested. There were three species of anonaceous fruits, the Sour-sop (*Anona muricata*), the Sweet-sop (*Anona squamosa*), and the Custard-apple (*Anona reticulata*). With the latter we had already formed

acquaintance in Brazil. Breadfruits were abundant. So were Golden-apples, as they are called, pleasant to the eye, and delightful to the palate, but the inner seed armed with wiry, projecting, wooden spines, which compel the eater, when devouring the juicy pulp, to proceed as circumspectly as one who is eating shad. There were yams, and cassava-meal, fresh ginger—in short a multitude of things which we all have read about, but which it was pleasant to see as they came from the fields and gardens.

In the northeastern part of Barbados there exists a small colony of a little green African monkey, the members of which are protected. The species (*Lasiopyga callitrichus*) is one of the commonest in captivity, and the usual attendant of the Italian organ-grinder. It has become naturalized not only in Barbados, but also in St. Kitts and Nevis. It is a remarkable fact that no monkeys allied to those of the South American mainland exist to-day in any of the West Indian Islands, except Trinidad, where a species of Howling Monkey (*Alouatta insulanus*) occurs. Whether the monkeys, which may have existed in the West Indies, were long ago exterminated, as have been the Indians, is a question which it is difficult at this late date to determine. Both the geological and the written records relating to the mammalian fauna of the Antilles are very defective. Many facts tend to show quite conclusively that the Greater Antilles must have had at one time a connection with the American mainland. The recent discovery in Cuba by Mr. Barnum Brown of the American Museum of Natural History of the remains of at least two species of sloths in the bottom of a pool from which he pumped away the water, and the discovery in the Isle of Pines by Mr. G. A. Link of the Carnegie Museum

of the remains of a peccary, which he found in 1912, show conclusively that in quite recent times the fauna of Cuba, at least, was allied to that of the not distant mainland. A hundred other facts might be cited which point to the same conclusion. Very probably long-tailed monkeys, related to those of South and Central America, once existed in the Antilles, but have gone the way of all the living. Many species of West Indian birds are now totally extinct. The introduction of the mongoose into Jamaica led to the total destruction in that island of many species of birds, which nested on the ground. The parrots of Cuba are going rapidly. The destroyer in this case is a human mongoose. He is a dealer in parrots, and during the past year he has shipped to New York City many thousands of living parrots. The poor birds live a year or two in the court-yards of New York homes, being taught to plead the needs of "Pretty Poll." In vain they squawk forth their woes, as they shiver in the frosty air, and then find their last resting places in garbage-cans. "Parrots are getting to be scarce in Cuba," says my assistant, "in the next ten years they will all be gone." A fine business, this! Why should any man be allowed to strip an island of its bird-life, just to put a few dollars, all of which is "blood-money," into his filthy pockets?

We left the market-place and drove through the out-skirts of the town into the country. We were struck by the diminutive size of the gray weather-boarded houses of the people. They are toy-houses. In fact they are only sleeping apartments. They could be picked up and hauled away on a cart. There were hundreds of them lining the roads in the suburbs. None of them had chimneys. The cooking is all done in the open air in their rear. Cane-fields cover

the land back of Bridgetown. The island produces annually about ninety thousand hogsheads of sugar. Along the roads barefooted women and girls were trooping into the town, carrying small quantities of fruits and vegetables to market in trays and baskets balanced upon their heads. At most their burdens were of little value measured in coin. We stopped and priced the articles they had for sale. A few pennies, a shilling, would have bought what the most heavily laden of their number was carrying over the hot roads. The poverty of the swarming multitude impressed itself upon us. The island is indeed over-populated, and the struggle for existence is acute, leading to a great emigration of laborers to other parts. Many of the men have in recent years found employment at Panama, where they have been helping to dig the big ditch which is to link the waters of the Caribbean with the Pacific.

On the way we passed a clergyman. The driver told us it was "the Moravian minister." A flood of memories was awakened. My father was a Moravian missionary in the West Indies when I first saw the light of day. My mother's grandfather was a Moravian missionary in the West Indies, the colleague and friend of another Moravian missionary, John Montgomery, the father of James Montgomery, the poet. John Montgomery served in Barbados, and he and his wife are buried on Tobago. My mother's father was born at a Moravian mission-station in the West Indies, and with his brothers was sent more than a hundred years ago, while they were still little children, to Bethlehem in Pennsylvania to be educated. There they lived and died, and there their descendants after them lived, some of them helping to make history. One of them was the founder of the great Bethlehem Steel Company, the

present controlling spirit in which is my friend of many years, Charles M. Schwab, and the First Vice-president of which was one of my table-mates on the voyage from Buenos Aires to New York. I told the coachman to stop, and, alighting, I set out to seek the missionary, and wish him Godspeed; but he had gone into one of the houses to minister at the bedside of a sick and dying man, and I felt I ought not to intrude, and came away. No body of men have ever shown more real heroism than the missionaries of the Moravian Church, who were the pioneers of Protestant Christendom in the effort to evangelize the neglected and helpless, not as was done by the emissaries of Spain in these islands, where the people were baptized and then barbarously exterminated, but as it is being done to-day by good men the world over, by teaching the ignorant to cultivate habits of industry, self-help, and self-respect, and reverence for things which are excellent, and pure, and of good report. The story of the Moravian missions in the West Indies is the story of a self-sacrificing devotion, which, beginning with the act of Leonard Dober, who offered to sell himself into slavery that he might reach and teach the slaves, has been one long and consistent effort of kind-hearted and wise men to carry light and truth into the dark places of the earth.

We left Barbados on the morning of November 13th, and passed northward along the western coast of the island, taking what the seamen call the "inner passage." We caught sight of St. Vincent and St. Lucia, their blue peaks rising above the western horizon. Early in the afternoon we were just off the southern shore of Martinique. The Captain pointed out with the pride of a true British sailor the "Stone Ship," as it has been called. Towering nearly six hundred feet above the water is a

great pinnacle of reddish rock, with sides so steep that it looks as if nothing but a sea-gull could reach its top. In the troublous times of the Napoleonic Wars when England and France were fighting with each other on land and sea, Admiral Hood of the British Navy resolved to take possession of this rock, which commands a narrow passage through which from time to time he discovered that French ships were escaping him. Somehow or other the brave sailors under his command found a way up the steep sides of the rock and anchoring one of his ships at the very foot of the cliff, he caused five cannon to be hoisted from her deck by ropes let down from the summit. He landed one hundred and twenty men as a garrison, and the fort was entered on the Admiralty lists as "H. M. Ship, Diamond Rock." For a long while the British sailor-soldiers held the place and gave the French no end of trouble. At last when they had shot away their last cannon-ball, and the drinking water had given out, they surrendered to a French fleet of sixteen sail, which had been for some time hammering away at them. These islands are full of memories which stir the blood. The story of the rise of the naval power of England is largely laid in West Indian waters. Here were the haunts of the buccaneers. Here Sir Walter Raleigh, Drake and Hawkins, Rodney and Nelson, won many of their laurels. There is not an island, not a strait, to which does not attach some legend, or story of historic interest. The blood of the sea-rovers and sea-fighters of the past has dyed these waters and crimsoned the soil of these islands.

The panorama of the western coast of Martinique was slowly unfolded before us in the light of a beautiful summery afternoon. We stood in close to the shore. We could see the hills rising above Trois Islets, and

recalled the fact that here was the birthplace of Marie Joseph Rose de Tascher de La Pagerie, and of her first husband, Alexandre, Vicomte de Beauharnais, whose father was the Governor of the island. Of that union were born a son and a daughter, Eugène and Hortense. Alexandre de Beauharnais was a brave soldier and a statesman, twice the President of the National Assembly of France. After his tragic death his widow married Napoleon, and this daughter of the West Indies became the first Empress of the French, her daughter the mother of Napoleon III, her son Viceroy of Italy, son-in-law of the King of Bavaria, and his son the Consort of Dona Maria, Queen of Portugal. They have all passed into the realm of shadows; but, as we looked in at the entrance of Fort of France, with its towers and houses gleaming white in the sunshine above the deep purple of the sea, we could not but think of the wonderful mutations which take place in human lives. Little did the smiling girl who set sail from this beautiful harbor among the hills to be wedded in France to the young man to whom she had been betrothed in her childhood dream that the crown of an Empress was to rest upon her head, and that she was going forth to play a rôle in one of the mightiest dramas of history.

And now we crept a little closer to the shore. The land began to rise in great folds of dazzling green. Behind the hills loomed up a mountain capped with clouds. We came still nearer. The top of the mountain was desolate. Down its steep slope ran a great wide gash of dull gray, spreading out like an inverted fan as it approached the border of the violet sea. In the lower reaches of that gray expanse stood, silent and deserted, a few crumbling arches and walls, all that

remains of what ten years ago was said to be the most enchanting of the cities of the West Indies, a diminutive Paris, set in the midst of tropical verdure and beauty. The gray mountain with the steam pouring out of the rents in its top and forming clouds about its summit is Pelée, the Destroyer; the ruins in the foreground are all that is left of the gay little city of St. Pierre. The Captain, who was standing beside me, told me of the awful scene, as he had looked upon it a few days after the holocaust in which forty thousand human lives were snuffed out in an instant. The details of the eruption have been fully told by the late Dr. Angelo Heilprin in his book entitled *Mont Pelée, and the Tragedy of Martinique*. The only consoling thought which arises in the mind is the reflection that the poor victims were not left to suffer long. Death in a most appalling form overwhelmed them, but it was "in a moment, in the twinkling of an eye." With one fierce burst the hot, burning sulphur-fumes, pouring from the bowels of the earth, swept down the flanks of the mountain with the speed of a hurricane, and all was over. But one man, a prisoner immured in a deep dungeon, survived out of the multitude. Of the heat and corroding power of that sulphur blast I saw a singular proof a few years ago in the city of Paris. Mons. Alfred Lacroix, the Curator of the collection of minerals at the National Museum in the Jardin des Plantes, showed me a keg of nails which he had found among the ruins at St. Pierre on the site of a hardware-store. The keg had been standing open when the death-dealing storm descended. The learned doctor has removed a stave in the side of the keg to permit the examination of the contents from the top to the bottom. At the bottom of the keg the nails are bright, new, and clean; but the nails in the upper half of

View of Mount Pelée from the Steamer.

A Negro Boy Diving for a Penny. Barbados.

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the keg have been turned by the hot sulphur blast of that day of terror into iron pyrites, iron sulphide, many of them having assumed crystalline forms. The chemical action which turned nails into crystals of iron sulphide was too great to be resisted by poor human flesh and blood, which shriveled into ashes before it. I can faintly imagine what must have been the agony of the moment. On the first day of August in the year 1887 I made the ascent of Asama-yama, one of the huge volcanoes of Japan, rising over eight thousand feet above the plains of the Kwanto. I was accompanied by a small troop of faithful Japanese attendants. The column of steam and sulphur-smoke rising from the crater was ascending in a perpendicular column a mile in height above the mountain-top, and then spreading out like a huge umbrella in the upper air. The day was still; not a breath of air was stirring. I undertook to measure the circumference of the crater, and had almost completed the task, when the servant who was standing nearest to me rushed toward me, seized me by the arm, and pointing upward exclaimed: "The cloud! Quick! run!" Before I had time to even reflect, I inhaled a breath of the excoriating sulphur-fumes. It was as if I had been stabbed in the vitals. I held my nose. I shut my mouth. I tried to run. I was forced again to open my mouth; again I was stabbed in the lungs. I stumbled, I fell, I rolled down a slope of lava-ashes. I gathered myself up, and again I ran, and at last beyond the reach of the white cloud which now was pouring in dense folds over the very spot where I had been standing a few moments before, I sank down exhausted. A wind suddenly rising was driving the fumes away to the west. For days afterwards it was painful to take a long breath and my mouth and throat

were sore. The cloud which overwhelmed St. Pierre was denser, hotter, more heavily charged with acid fumes than the one a taste or two of which I had on Asama-yama, but I can imagine the awful agony of the death which overtook the people of the ill-fated city on the 8th of May, 1902; I have tasted it just for an instant, and the memory of that little taste is enough.

As the afternoon wore by we came under the towering cliffs which guard the southern coast of Dominica. A silvery waterfall of great height was pouring directly into the sea from a dark precipice at the very end of the island. There is an air of rugged grandeur about the mountains of Dominica which is most impressive. The story is told that a British naval officer was once asked at his Club to describe the surface of this island. He took a piece of writing paper, crumpled it up, tossed it upon the table, and said: "There you see just how the surface of the island looks." It is the most mountainous and roughest of all the Lesser Antilles. Guadeloupe, the next island in the long chain, has one peak, the Soufrière, which is a little higher than the Morne Diablotin on Dominica, just falling short of being five thousand feet in height; but Dominica has two such peaks, each of which exceed four thousand feet in height above the level of the sea, one of them being only a little lower than the high peak on Guadeloupe. Unfortunately the darkness of night prevented us from seeing much of the latter island though we passed immediately under the cliffs.

On the following morning the Captain kindly sent a messenger to call me early. When I flung back the curtains at the windows of my cabin the dawn was just breaking over the sea. I hurriedly dressed, and went on deck. The sight was calculated to awaken wonder.

To the south the peaks on Guadeloupe were just dimly visible as points above the horizon. Nearer at hand, silhouetted against the glory of the coming day, were the outlines of Montserrat, Nevis, St. Kitts, and St. Eustatius. The first three islands belong to Great Britain, the latter to the Dutch. On Nevis Alexander Hamilton was born on January 11, 1757, and a little more than thirty years afterwards a young English captain by the name of Horatio Nelson yielded to the charms of a bright young widow, Mistress Fanny Nisbet, whose husband, a physician, had not long before gone to the better world. They were married on March 11, 1787, very quietly. As little as Josephine de La Pagerie thought of playing a part in the history of the world when she married Alexandre Beauharnais, so little thought the widow of Dr. Nisbet, when she married the slight and boyish English captain, that she was wedding one of the heroes of all time. And neither she nor Josephine on their wedding day suspected the domestic infelicity and the terrible heartaches which awaited them. Napoleon had, as he thought, reasons of state for deserting the noble woman who had been his guiding star in the early years of his success. Nelson had no reason for conjugal infidelity. It is a foul blot upon his career. Great as were his achievements, his personal character was not such as to make him worthy to be held up as an example to his fellow-men.

Dead ahead of us was Saba, and we soon came alongside of it. This island, which is almost circular in outline and scarcely three miles in diameter, rises more than half a mile in height above the ocean. There is no anchorage, except at the very foot of the tall rocky steeps which guard it on all sides. The Admiralty chart shows three hundred and seventy-five fathoms of

water within half a mile of the shore. Access to the island is up a narrow cleft in the rocks on the southern side. The island belongs to the Dutch. The inhabitants are few, and are fair-haired descendants of the original settlers from Holland. There is a small village in the interior high up on the mountain. The people enjoy the reputation of being skilled as builders of boats. The sole spot on the island fitted for such work is a low narrow platform of rock at the foot of the defile down which they travel to reach the edge of the water. Here they build and launch the craft, which they sell to the people of the adjacent islands. As we passed Saba, the Captain handed me a fine glass and bade me look. There in the morning sunlight high up on the edge of a cliff was a tiny house. A man in his shirt-sleeves was leaning against the doorpost; a woman in the little enclosure near by was milking a cow. Children came and stood and watched the steamer as she went by and waved their hands. We responded by waving our handkerchiefs. To the southwest is the great Saba Bank, a broad meadow of coral under the sea, which, in spite of the great depth of the water close to the island, shoals in places to six or seven fathoms, so that the chart says, "rocks can be distinctly seen when over it." We left it on our port side.

Until noon of the 14th of November we were still in sight of land. The last of the Antilles to sink below the horizon was Sombrero, the Spanish Hat, a low, flat, sun-baked expanse of coral-rock, topped by a small lighthouse. We had caught our last glimpse for the time of "lands of sun." We were now steaming quickly north toward the cold and darkness of winter. Nevertheless the air was mild and balmy and remained so until the end of the voyage had almost been reached.

On the afternoon of the 18th of November about three o'clock, as I happened to hold the "dummy-hand," I rose from the table, walked to the window of the reading-room, where we were playing, and looked out. There before me was Atlantic City, the boardwalk, and the long unsightly row of huge caravansaries which are ranged along the beach. Later when it grew dusk I chanced to look up and on our port side saw a light suddenly flash forth—not like the lights which we had generally seen along the coast of South America, and among the islands of the West Indies, shedding a feeble radiance into the darkness, but a light, great, strong, furious. Handfuls, armfuls, great heaped-up piles of light, that beacon tossed out toward the sea, and then for a moment all was dark. Again in surges of glory the great flashing lantern scattered its rays over the waters. It can be seen for miles and miles. I know that light well. It stands upon the Atlantic Highlands and tells the traveler coming from off the seas that he is approaching the harbor of one of the greatest cities of the world, the doorway of North America. When dinner was over we went on deck and found that we were quietly riding at anchor off Quarantine. The air was cool and frosty. The journey begun in August heats was over. Nearly twenty thousand miles by sea and by land had been covered. We were home again.

CHAPTER XXIII

OBSERVATIONS AND REFLECTIONS

"Zar de tres tintas, indio, blanco, y negro,
Que rige el continente americano
Y que se llama Pueblo Soberano."—*Felipe Pardo.*

THE discovery of the New World added to the resources of mankind a number of things, which before that event were unknown to the inhabitants of the Eurasian Continent and Africa. It is interesting to observe how many of the food-plants and vegetables, now in common use all over the world, had their origin in Central and South America. Perhaps the most important of these is maize, or Indian corn (*Zea mais*). The word *maize* is Haytian in its origin. It was the name which the Spanish conquerors of Hispaniola received from the Indians and which they carried with the grain to Europe, where it became incorporated into all the modern languages. The cultivation of the plant has extended throughout southern Europe, Africa, Asia, and Oceanica. It is one of the principal grain crops of the world to-day, and millions of human beings and tens of millions of domesticated animals depend upon it in whole or in part for their sustenance. The potato is another American plant, which plays an important part in the domestic economy of mankind. It grows wild on the western side of South America. Improved by cultivation and developed in countless

varieties, it is an important factor in the food supply of the nations of the earth. The tomato, the egg-plant, and the various varieties of green and red peppers are the gift of the American tropics to the tables of civilized men. The cacao is a strictly South American plant, the cultivation of which has been carried into the hot lands of the Orient. Chocolate is a Mexican word. In its original form it was *choco-latl*, the first word in the compound being the Aztec name for *cacao*, the second syllable being the Aztec word for *water*. Long before the *conquistadores* made their invasion, the people of the hot lands of South America had practised the art of grinding up the seeds of the cacao, and mixing sugar and the fragrant extract derived from the pod of the vanilla, which grows in the hot American woods, with the paste, thus forming the material for a refreshing drink. The work done on Indian metates is now principally carried on in European and North American factories, the Indian matrons and maids, who wielded the mealing-stones, being replaced by machines driven by steam or electricity. A recent study of the literature of the subject made by the writer shows that over one hundred well-known plants of the forest, field, and garden, yielding food or medicine to man, have been derived from the flora of the Americas, and principally the floras of Middle and South America.

The fauna of America has added but few species to those in domestication. The most notable addition is the noble fowl which graces the tables of Christendom on festal occasions. The bird was imported into Spain from Mexico by the early Spanish explorers. It had been domesticated by the Indians, and also ranged in its wild state from the highlands of Mexico as far north as New England. Its English name, *turkey*,

points to its introduction into Great Britain from Mediterranean lands.

The gifts of the fauna and flora of these lands to the world in the last analysis have been more valuable than the gifts of the mines, for which these countries are famous. The value of the annual crop of maize alone exceeds by far in its aggregate amount all the treasure which is being annually extracted from the mines of silver and gold which are found in Central and South America. The amount which the poultrymen of Christendom will receive next Thanksgiving Day and Christmas for the turkeys sold from their stalls will exceed in the total all that will be paid out during this year of grace by those who purchase diamonds and pearls. As permanent sources of wealth corn-fields and poultry-yards are to be preferred to mines of the precious metals and of gems. They pay better in the long run.

The undeveloped agricultural resources of South America are enormous. Not only has the continent given much to the stock of those things which make life possible and enjoyable, but, as a territory capable of being subdued and made productive, it offers a wide field for coming generations of men who shall be willing to obey the primal command to till the soil and cause it to yield its increase. Of the great fertility of the plains of Argentina I have already said enough; but there are other vast regions in South America which are capable of being cultivated and made to minister to the wants of humanity.

The mineral resources are very great. There is an abundance of iron and copper in various places. The ores of the precious and certain of the rarer metals are abundant in the cordilleran region. There is evidence

that petroleum and natural gas exist, but the localities where these occur are as yet difficult of access, and no development of consequence has taken place. Coal is conspicuous by its absence from most of the geological formations of South America, and, where it does occur, it is of inferior quality. It must, however, be remarked that there are great areas in which no thorough examination has as yet been made to ascertain whether coal is present or not. The tropical sun atones for the lack of coal over the greater part of the region, so far as the need of securing warmth for human habitations is concerned, and the abundance of available water-power compensates in part for the lack of mineral fuel as a source of motive power. Along the Andes, in eastern Brazil, and in southern Argentina there are rapids and falls enough to drive all the engines now at work in the world.

The greater part of the continent lies within the tropics, and therefore the climatic conditions are not generally regarded as favorable to the Caucasian. There are, however, parts of the continent which are extremely favorable to this race. Uruguay, Argentina, Chili, and the highlands, both of the east and the west, reveal conditions which are quite equal to those which are found in Europe and North America where the Caucasian has been evolved at his best. The hot lands of Brazil, the Guianas, Venezuela, and Colombia are enervating. The diseases, which have hitherto made life in tropical countries dangerous, bid fair with the advance of knowledge to be brought under control. Even in the low-lying river-valleys, with the draining of the swamps and the extermination of insect plagues, the conditions of life will become more favorable. Many of the valleys of our own western States at the

time of their first settlement were highly malarious. I can remember as a child hearing the remark made that in the valley of the Tuscarawas in Ohio the cost of the quinine needed to keep the family in health exceeded the cost of the flour which was consumed. The remark was intended to be a somewhat playful exaggeration, but sixty years ago it had foundation in truth. It would not be made to-day. Just as the reclamation of the swampy lands in the Middle West of our own country has led to the disappearance of malarial fevers in places which half a century ago were haunted by them, so also will it be in South America. The city of Santos is a notable example of this (see p. 80).

But something more is needed to constitute a state than the existence of large material resources and favorable climatic conditions. The human element is the most important. If Greece in the days of Socrates had been inhabited by Maoris, and Rome at the time of the Cæsars had been populated by Berbers, the story of those days would have been very different. Man is the highest of the animals, but, being an animal, a good deal depends upon the breed. From the standpoint of ethics we justly claim that all men, so far as their *rights* are concerned, are born free and equal; but they are not born equal in the matter of their *talents* and *capacities*. In physical, mental, and moral respects there are great and obvious differences between individuals of the same race, and between races themselves. In studying the present condition of the states of the south the student is naturally impressed by the fact that there has occurred in these lands a great intermingling of racial elements. In fact the commencement of the amalgamation of races began upon the

soil of the Iberian Peninsula prior to the occupation of the South American continent.

The lands of Central and South America, colonized originally by the Spanish and Portuguese, are often denominated "Latin America." The appellation is not strictly scientific, and in many respects is misleading. The people of Spain and Portugal, although the languages they speak are strict derivatives from the tongue of old Latium, have in their veins very nearly as little Latin blood as the people of Great Britain and Ireland. The student of ethnology knows well that the Basques, who were the leaders in the colonization of Chili and Argentina, are as little Latin as the men of Cork or Tipperary. They are a remnant of the old Iberian race, which tenanted the peninsula before the days of Hannibal, before the days of Cæsar. They have perdured through the centuries in their home about the head of the Bay of Biscay, while the surges of conquest and colonization have rolled hither and thither through Europe, just as the Welsh have survived in their mountains, and the Highlanders of Scotland have survived in their fastnesses. They came in contact with the various peoples who from time to time overran the Peninsula, but they were neither Africanized nor Romanized. They remain to this day a peculiar people. It is an ethnological error to speak of them as representing the Latin race. Neither is the Spaniard nor the Portuguese, strictly speaking, Latin. For that matter it is doubtful whether there are any true survivals of the old Latins, in all of southern Europe, who have preserved in its purity the blood of ancient Rome. The Latin races of Europe are such in sentiment, but not in physiological fact. Even in Italy the modern Italian repre-

sents in his veins Gallic and Teuton rather than Roman descent. Omniscience alone could disentangle from the skein of life in southern Europe the thread of Latin humanity which is woven into the blood of these peoples. This is preëminently true in Spain and Portugal. No population in Europe represents a more complex synthesis of racial elements than the population of the Peninsula. One of the latest writers upon this subject, himself of Spanish lineage, says:

> Spain is African, even from prehistoric ages. The Iberian is like the men of the Atlas; like them he is brown and dolichocephalous. The Kabyle *douar* and the Spanish village represent remarkable analogies. An early geological change separates by a narrow strait two similar countries; two successive invasions spread an infusion of African blood throughout the Peninsula. Phœnicians and Carthaginians found colonies in maritime Spain; in 711 seven thousand Berbers establish themselves in the south; and the invasion of the Almohades in 1145 still further unites Iberians and Africans. During the long centuries of conflict between Christians and Arabs the two races intermingle under the cultivated tolerance of the Khalifs. The Gothic kings seek the aid of Arab chieftains in their quarrels; the Cid is a condottiere who fights alternately in the Mussulman and Christian armies, serving with his troop of heroes under the highest bidder. The Spanish monarchs in turn intervene in the quarrels of the Khalifs, and Alfonso VI. in 1185 allies himself with the Moorish king of Seville in order to conquer Toledo. The Arabs study under the masters of the Spanish capitals, while the Spaniards study Arabic, and are initiated into Oriental science.[1]

The Peninsula formed not only a bridge from which Africa sought entrance into Europe, and indeed found

[1] F. Garcia Calderon, *Latin America* (New York, 1913), p. 41.

it, but a *cul-de-sac* in which the spent invasions of Europe from the north and the east found a final resting place. Across the narrow strait swarmed Phœnicians, Carthaginians, Berbers, Arabs, Copts, Touaregs, Syrians; from the north and the east came Romans, Franks, Goths, Visigoths, and Vandals. All mingled in time with the old Iberian stock; except where, in the mountain fastnesses of the Pyrenees, the ancient people, to-day known as the Basques, kept themselves more or less aloof from the invaders.

The discovery of the New World evoked in this exceedingly complex people the spirit of adventure and daring. They found their way across the Atlantic and took possession of the newly found lands. They intermarried with the conquered races. Their leaders in Mexico and Peru took to themselves as wives the daughters of Indian princes. The soldiery were content with less exalted unions. In time there took place an importation of Africans to till the soil. The process of racial amalgamation went further. The result is something unlike what has occurred in any other region of the globe. To quote again from the same author who has just been cited:

> From the negro *bozal* recently imported from Africa to the *quinteron*, the offspring of slaves purified by successive unions with the whites; from the Indian who mourned his monotonous servitude in the solitude of the mountains, to the colored student of the universities, we find in the Seventeenth Century as in the Twentieth, in the colonies as in the republics, every variety of this mixture of Iberians, Indians, and Africans.[1]

The result of this great fusion of bloods represents

[1] Calderon, *l. c.*, p. 50.

only in small degree the perpetuation of the Latin race. It would be far more correct from the standpoint of the ethnologist to speak of these peoples as Iberian Americans, if some comprehensive term, pointing back to their origin, is required.

But while the process of racial amalgamation has been going on, there has also been going on a process of differentiation. The population of South America is not homogeneous. There are distinctions observable, which have their root in the past. There are racial distinctions which make themselves manifest. There are historical traditions and points of view which are radically different. These republics are, as they claim to be, *nations*, and not states, such as those of the American Union in North America. The provinces of the South American republics correspond to our states. In each of these Iberian American republics a distinct national consciousness has been evolved. The Argentino is proud that he is an Argentino, the Chileno that he is a Chileno, the Brazilian that he is a Brazilian. With the lapse of time this national consciousness will be deepened and intensified, and in the lapse of time the commingling of blood will go further than it has yet gone. To-day in Argentina the population is becoming most complex, every race and people under the sun is being melted into the human mass. But is not this precisely what is taking place in the United States of North America?

The reader must be cautioned not to conclude from what has been said that the process of racial amalgamation has been absolutely universal, and that there is no remnant left among the descendants of the early settlers who are of pure Spanish or Portuguese extraction. Just as in the United States there survives an

element in the population who recall the fact that they are the descendants of those who were the first to lay the foundation of the States along the Atlantic seaboard, and who pride themselves upon the maintenance of pure Caucasian pedigree, even if they do marry outside of the charmed circle of the Sons and Daughters of the American Revolution, so in every one of the South American republics there is to be found a certain relatively small percentage of the population which has carefully avoided intermarriage with others than Caucasians. These old South American families, strengthened by unions with those of Caucasian stock who have more recently come into the countries where they live, constitute an aristocracy of talent and of wealth, which has been potent both in the political and social life of the South American nations. This is especially true in Argentina, Uruguay, Chili, and Brazil, to a somewhat lesser extent in the northwest, in Central America, and in Mexico. This old landed aristocracy has exercised oligarchical prerogatives, and up to the present time has largely ruled these lands. From this comparatively limited body of the citizenship have been drawn the leaders in the church and the state.

The writer as a student of ethnic conditions must also utter a warning against the conclusion, which might erroneously be drawn from what has been said, that the invariable result of a mingling of the old Iberian stock with the native races tended to a lowering of vitality and mentality. This is perhaps true in general, but there have been notable exceptions. It is not by any means to be accepted as a law that the offspring of unions between Caucasians and Indians and negroes is devoid of intellectual and moral vigor.

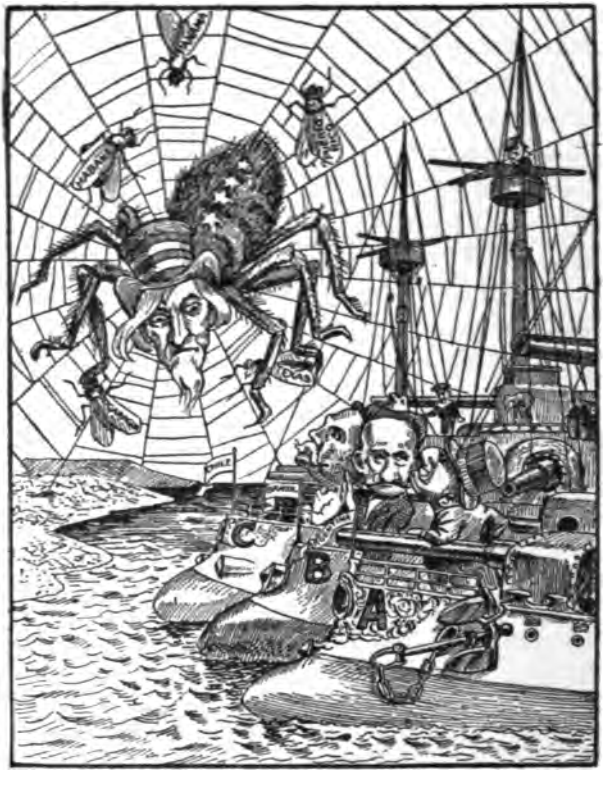
Rivadavia, the first President of the Argentine Republic, was a mulatto; but he was a man of great mental capacity and high moral power, a far-seeing statesman, and a true patriot. Measured in every way he was truly a great man, of whom his nation may well be proud. Santa-Cruz, the great *caudillo*, who for twenty years shaped the destinies of the infant republic of Bolivia, was the son of an Indian princess, the *Cacica* of Guarina. No student of his career can call in question the fact that he was a man of signal ability. Many other cases might be cited which tend to show that the union of the bloods of the different races is not necessarily followed by retrogression in physical and mental power. Nevertheless these cases are unusual and sporadic. The general result of such unions has been to level downward rather than upward. To-day in South America social standing is determined, as it was in the time of Humboldt, by the degree of the whiteness of the skin.

From a broad survey of the human conditions which exist in South America there is a great deal to create hopefulness as to the future of these nascent nations. There is in them enough genuine virility to create peoples capable of performing their part with distinction upon the arena of the world. There is intellectual capacity, there is no lack of high ideals and pure purposes, there is physical energy. These lands of the Southern Cross, the story of which in the past has had in it so much of the painful and the tragic, are certainly destined in the process of the years to be the scene of much which shall glorify humanity.

Since my return I have been frequently asked what is the attitude of these peoples toward the people of the United States of North America. To answer such

a question a broader induction of facts is necessary than it is possible for a man to make who has only paid a fleeting visit to the south, and has only touched it at a few points. I can only record my impressions. I may however say truthfully that so far as my individual experience is concerned I discovered nothing which would not imply genuine friendship for the United States in the circles with which I was brought into contact. It is true that it was my happy lot to be thrown during my brief stay into the society of educated and broad-minded men, who in all lands are very much the same. There is an international brotherhood of scientific and literary men, which lives above the atmosphere of common strife, and which, bound together by mutual sympathies and purposes, sees in all men friends. It was with such men that I was associated. There is reason, however, to think that not all of the people of these lands are as intelligent and far-seeing as the cultivated gentlemen with whom I was brought into contact. I noted not without surprise as I read the daily papers that a feeling of suspicion and distrust as to the integrity of the purposes of the citizens of the United States in their dealings with the peoples of South America was occasionally expressed. It was particularly surprising to note the evident hostility of the only English newspaper printed in Buenos Aires to all things "American," using this term in the sense in which we are in the habit of employing it among ourselves. It was at once amusing and a trifling disconcerting to find one morning on the front page of *Caras y Caretas*, the weekly magazine published in Buenos Aires, which corresponds to our *Puck* and *Judge*, a caricature representing "Uncle Sam" as a big black spider in the middle of his web, about

him a number of victims labeled *Texas*, *Puerto Rico*, *Panama*, *Habana*, and *Nicaragua*, while in the foreground are three "dreadnoughts" flying the flags of Argentina, Brazil, and Chili, the Presidents of the first and last of which are looking up with evident apprehen-



sion towards the spider-web, which fills the sky. The title of the caricature is, "El A. B. C. de la cuestion"; the legend below is, "Hay que completar el alfabeto, si no queremos ser cazados como moscas"—*The alphabet must be filled out, if we do not wish to be trapped like*

flies. In speaking about the matter to one of my Argentine acquaintances I ventured to plumply ask him the question why Argentina should be apparently venturing upon the very costly and burdensome undertaking of purchasing and maintaining a fleet of war-vessels. He answered, "We are doing it because we are afraid of you." I replied, "But what reason have you to fear the United States? Do you not realize that there is not a rifle in our navy which would ever be used except to protect and shield you in the event that some grave national peril should threaten you? We are your friends and not by any possibility capable of becoming your enemies." To this remark he made no reply.

It was disconcerting to now and then overhear men speaking of the "Yankee peril." The latter I suspect is more keenly apprehended, not by the people of the country themselves and their intelligent rulers, but by the mercantile classes of foreign lands, temporarily resident in South America, and doing business in the markets. The gradual increase of the commerce of the United States with these countries has to a certain extent aroused the jealousy and provoked the apprehension of a certain element, which has long been entrenched in these republics and has come to believe that it possesses a rightful monopoly of their trade. But the South American of Portuguese or Spanish extraction, who has been for many years compelled to pay heavily for the satisfaction of his wants, is not disposed upon the discovery of the fact that he can obtain his wares of equal quality at lower prices to denounce the man who is thus purveying to his wants as a public enemy.

There are other "perils," which the gentlemen of the newspaper fraternity and essayists detect upon the

world-horizons, as they scan them from the quiet of their sanctums, and which, as they portray them, help them to work off editions of their writings. One of these, scarcely less terrific in its proportions than the so-called "Yankee peril," is the "German peril." This is regarded as being particularly insidious in its nature. Its ravages are noticeable especially in southern Brazil, where it has been accompanied by the reclamation of large tracts of hitherto uncultivated lands, the establishment of schools, churches, and the institutions of civilized life. It is remarkable for the importation into the regions where it has fastened itself of habits of order, thrift, and industry. It is also characterized by a certain persistence in the use of the language of the Fatherland, an addiction to beer and to sauerkraut. In North America we have so long been acquainted with this "peril," that in a measure it has lost its terrors. It gave us the Astors in New York, and the Wistars in Philadelphia. It invaded Pennsylvania early in the eighteenth century. It gave us the Muhlenbergs, the Shunks, the Snyders, the DeSchweinitzes, the Wolles, the Haldemans, and the Rothermels. At the time of the Revolution it was represented by a Steuben and a DeKalb; at the time of the Civil War by such men as Carl Schurz, Siegel, Rosecrans, and Schimmelpfennig. It transformed the central part of Pennsylvania into a veritable "Garden of the Lord," and to-day is relied upon to do good work wherever good work is required. It is useful in schools, colleges, libraries, museums, and studios. It works wonders in mills, stores, and shops. It is especially useful in fields and forests. The experience which the people of the United States of North America have had with the "German peril" inclines them to take it to their

bosoms. As a student of history and human development the writer is inclined to think that this dark cloud should not be felt by South American statesmen to be as thoroughly charged with mischief as some of the newspaper writers in the southern cities apparently think it to be. The lines of Cowper are appropriate in this connection, and the writer, as a "Pennsylvania Dutchman," commends them to those of his South American friends who are at present afflicted with Teutonophobia:

> Ye fearful saints, fresh courage take,—
> The clouds ye so much dread
> Are big with mercy, and shall break
> In blessings on your head.

There is still another "peril," which the wise men have discovered in South America as in North America, and that is the "Japanese peril." This is like the "German peril" characterized by industry and adaptability to circumstances. It is frugal, turns deserts into gardens, and with plodding zeal accomplishes the world's work, wherever it gets a chance to address itself to it. Withal it is artistic in the effects it produces. But of all these bug-a-boos none at the present time in certain circles is taken quite as seriously as the "Yankee peril." While expressing grave concern for the darkness of the cloud in the northern sky these sapient gentlemen do not fail to recognize the fact that the Monroe Doctrine has ~~been the Palladium of~~ their liberties in the past. As they contemplate with excitement the "German peril" and the "Japanese terror," they lay to their hearts the consolation that things might be much worse than they seem, since the great Republic of the North has said that it "could not view

any interposition for the purpose of oppressing the states of South America or controlling in any other manner their destiny by any European power in any other light than as the manifestation of an unfriendly disposition toward the United States." This whole matter of "perils," which is consuming so much space in the columns of the sensational journalism of the day, is beginning to be monotonous to intelligent readers, who know their world. It might be dismissed with laughter, were it not for the fact that its endless reiteration has a tendency to provoke genuine irritation, which is not pleasant.

Our French friends, since the eclipse of Spain as a world-power, have in recent years come to feel that they in a certain sense hold the hegemony among the so-called Latin nations, and there has been a great deal of friendly *camaraderie* and pleasant interchange of compliments between them and the politicians of the South American republics. It is all very delightful and in certain aspects it is amusing. The prediction made by a recent writer that the day may come when the center of Latin culture will be removed from the banks of the Seine to the banks of the Rio de la Plata, and that Buenos Aires will become the home of the arts, as Paris and Rome have been in the past, involves a rather bold flight of the imagination. Among cultivated circles in South American lands the representative arts are indeed appreciated; but, so far as the writer could ascertain, on the practical side there is as yet very little effort being made to cultivate these arts. The statuary and pictures to be found in galleries and the homes of the wealthy are principally importations, as they are to a very large degree also in the United States of America. The number of sculptors and

painters born on the soil of the South American states is very small, and the works of art produced by them up to the present time are a negligible quantity. Still, as I have remarked, art is appreciated, and I had evidence of that fact as I went to and fro between La Plata and Buenos Aires and saw beside the railway track, in the middle of a muddy and neglected pond, a plaster cast of the Venus de Milo, at sight of which the gentlemen on the train looked forth with pleasure and the *señoras* and *señoritas* held their fans before their faces. What can have induced the implantation of this effigy, recalling the Louvre, in the midst of a frog-pond, except the rising and budding impulses of æsthetic sentiment? There must be a future for art in this New World.

Since his return from South America the writer has frequently been asked what is likely to be the result of the opening of the Panama Canal, and particularly whether it is going to result in the cheapening of food-supplies in the United States. The canal will not bring the meat and grain of Argentina and Uruguay, the coffee and sugar of Brazil nearer to us than they now are. The agriculturally productive regions of South America lie on the eastern side of the Andes. There is only a narrow strip of productive land on the western coast of the South American continent, and the crops of the region are not much more than adequate at the present time to supply local wants. The only railway which at present connects the rich plains of the Atlantic side of the continent with the ports on the western coast is not likely to be used to any great extent for the transportation of grain and cattle. The Trans-Andine Railway, which links Buenos Aires with Valparaiso, has some very steep

grades, and is partly narrow gauge at present; traffic upon it in the winter months, June, July, and August, has been much interrupted by landslides and snow-falls, and up to the present has been more or less irregular. It is extremely improbable that this road under existing conditions could be made the vehicle of a large traffic in cereals and meats, destined to be sent northward up the coast by the canal to North American ports. The ocean-mileage from Valparaiso to the Atlantic ports of the United States is two thousand miles less than from Buenos Aires to the same ports, but the land-carriage from sea to sea would more than consume any slight reduction in cost on account of the shorter distance by water.

The new canal will give easy access from Atlantic ports to the ports of Ecuador, Peru, and Chili, but the exports of food-stuffs from these states are certain to be relatively small. Ores, nitrates, and hides may be shipped in increased quantities from these regions, but the Panama Canal does not reach out to the great food-making centers of the southern continent, and the result of its opening to commerce will not in all probability reduce the cost of bread and meat in the United States. If half of what the canal has cost the nation had been devoted to a systematic upbuilding of the shipping industries of the United States, the result, so far as the development of commerce and the lowering of prices for staple commodities is concerned, would have been much greater. But the building of the canal was not undertaken for the purpose of reaching South America, rather for the purpose of reaching quickly and cheaply our own empire on the Pacific coast.

I would like to revisit South America in the year

A.D. 2012. What a garden of delight the land will then present to view! What a noble group of happy and prosperous nations will then exist, covering the continent, the wastes redeemed, the spirit of unhallowed rivalry and jealousy abolished, and the blessings of world-peace prevailing! If men are wise and good-natured, as they may be; if they come to know each other, as they can; the Millennium need not long be deferred.

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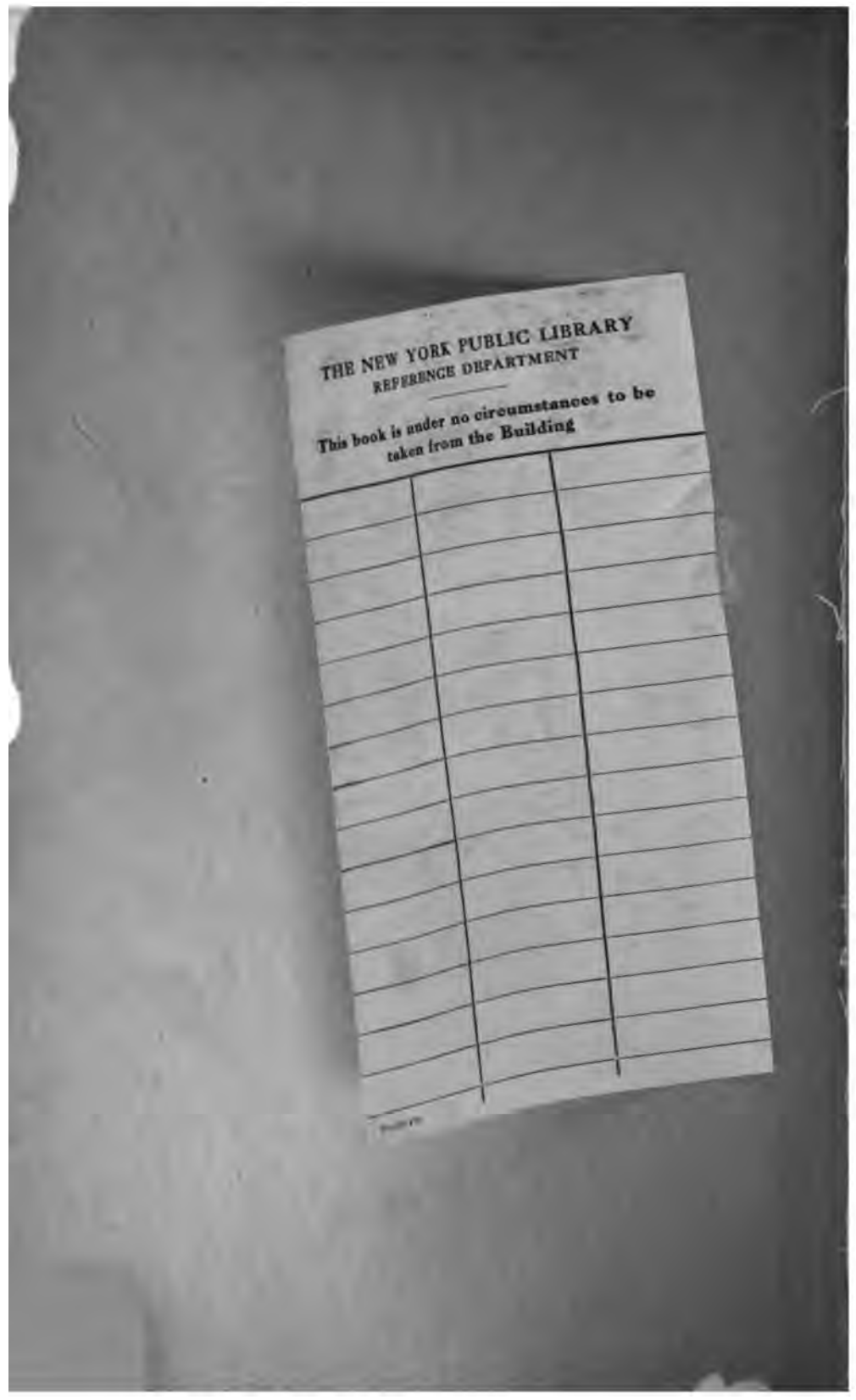
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